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General Scientific

THE COMMON HOUSE-FLY AND THE PROBLEM OF GETTING RID OF IT.

JACQUES W. REDWAY, F.R.G.S.,
Mount Vernon, N. Y.

The term *house-fly* is somewhat misleading; most species seek shelter when out-of-door conditions are uncomfortable. The various stable-flies are quite as much at home in an ordinary kitchen, a food shop, a butcher's stall or a dairy as in a stable or a straw stack. They are more numerous in stables than elsewhere, because rotting straw and stable matter is their natural breeding place. The various house-flies are most numerous in kitchens and filthy back yards, because such places are the favorite feeding and breeding places for the species. Wherever putrid meat is accessible, indoors or out-of-doors, the bottle- and the blow-flies congregate for the reason that putrid meat is the favorite breeding place.

In general, putrid or rotting nitrogenous matter is the substance in which practically all flies that are house pests breed. Places that are free from rotting filth are pretty apt to be free from flies. Even if brought or driven to clean places they will not survive for more than two or three generations, and the ease with which a house may be rid of them is amazing.

The common house-fly constitutes more than ninety-five per cent. of the number infesting urban residences. In rural districts, especially where houses and stables are only a few feet apart, the proportion of stable flies is materially greater. Of the few species that constitute the remaining two or three per cent. the dung-fly, the jet-black window-fly, the cluster-fly and the tiny fruit-fly are the most numerous. The blue and the green bottle-flies are rarely seen indoors—they are accidents rather than incidents.

The biting stable-fly excepted, it is doubtful if any of the house-flies possess skin-piercing mouth parts. Therefore, in spite of an almost universal impression to the contrary, the common house-flies do not bite. The mouth parts of the insect consist of a tube with a very effective sucking apparatus at the tip. The sucking apparatus would certainly irritate an abraded surface of the skin; it might also infect it. Years ago, an acquaintance in Arizona contracted anthrax in this man-

ner. While he was dozing in his office a bottle-fly lit on a slight abrasion on his cheek and the irritation awakened him. A few days afterward a high fever set in. He immediately took a train for Los Angeles, but died a few hours after reaching the hospital. I have yet in my collection a section obtained at the post mortem. Even the primitive methods of staining at that time employed shows the tissue congested with anthrax bacilli.

The jet-black window-fly breeds mainly within doors, the larvæ growing in cracks and crevices where moist filth has accumulated. It gets its name because of its soft, dead-black color and from the fact that it is so frequently seen on windows. It is somewhat smaller than the common house-fly. The fruit-fly is the smallest of the flies that are ordinarily about a household. It is seldom seen except in the immediate vicinity of overripe and decaying fruit—rarely more than two or three feet away. Other species are rarely found and need not be described here.

There is a prevailing impression that flies grow in size after reaching the insect stage—a belief that probably is due to the fact that the individuals of several species are smaller than the common house-fly. As a matter of fact, within a few minutes after the fly sheds its pupa-case and spreads its wings, it has reached full size; it does not grow thereafter.

Piles of horse dung are the most favored breeding place of house-flies and, in moist summer weather, dung piles two or three days old are apt to be pretty lively with larvæ. A female fly deposits anywhere from one hundred to one hundred and fifty eggs in a single batch and, in her brief span of life, she will deposit from two to four of such batches.

But house-flies are numerous where stables do not exist, and the researches of L. O. Howard, chief of the Bureau of Entomology, have shown that, for want of better breeding places, they will breed in almost any sort of moist decaying or putrescent matter, such as rotting leaves and grass that have been left in nooks and corners of the yard. They breed in soft ground or turf upon which slops have been poured, in the refuse of the kitchen and in uncovered garbage accumulations. In one instance a dumping ground within a few rods of a community caused a plague of flies that made life

almost unendurable. In this particular case the flies did not of their own accord wander to the community—they were blown thither and lodged upon buildings and shrubbery because they were stopped by these obstacles. Within a few days most of them had died, but a few survived long enough to breed new generations. The trouble did not cease until the dumping ground was burned over and the surface ploughed.

Warmth is necessary for the incubation of the eggs, and this is furnished as the chemical process of putrefaction goes on. The moist decaying matter is also the food of the larvæ. The eggs begin to hatch in from eight to twenty-four hours after they have been deposited, the time depending on the temperature of the substance in which they have been deposited. At their emergence the larvæ are threadlike and transparent, but they grow rapidly. They moult twice, and by the time they are ready to enter the pupa stage they are about one-third of an inch in length. After the second moulting their color gradually becomes creamy and the skin loses its transparency; in the meantime, the head, thorax and abdominal sections of the insect become roughly outlined. In warm, moist weather the larvæ life is four or five days; in cool or in dry weather the time may be considerably prolonged. A temperature of 90° and humidity of 90 per cent. make the best conditions for rapid growth.

Before going into the pupa state the larvæ seek places that are comparatively dry. The pupæ may be found on the under side of rocks, boards or other substances lying on the ground, and almost always near the edges; many of them also crawl into loose, dry earth. As they enter the pupa-stage the enveloping skin shrinks about the insect, becoming dry and tough, gradually turning dark brown in color. Even to the naked eye segmentation is discernible.

The period of pupation lasts anywhere from three or four days to two weeks; in cold weather it may be much longer—perhaps several months. As the insect crawls out of the split pupa-case it is a rather forlorn appearing specimen. After a few minutes in the open air, however, its body takes shape and its wings expand. In ten or fifteen minutes it is in fine form, and in two or three days thereafter the female deposits her first batch of eggs. Between egg deposition and insect stage, the period may be as short as eight days; ordinarily it is from twelve to fifteen days.

In the insect stage the house-fly lives from twenty to thirty days. In the late summer pretty nearly all the species infesting houses are subject to a parasitic disease resembling vegetable mould. It is not uncommon to see an insect half-covered with the fungus growth so rank that it is plainly visible without the aid of a magnifying glass. Of the various diseases to which the species are subject this is the most fatal.

The problem whether or not house-flies survive the winter in a dormant state has been warmly discussed. In certain tropical and subtropical regions flies breed in successive generations throughout the year. In the colder parts of the temperate zone practically no breeding occurs after the first frost, and three or four freezing nights in succession puts an end to all flies out of doors. By the first of December scarcely a specimen of the true house-fly can be found indoors. Various efforts to keep them through the winter have been made. The experiments of Bishopp, Dove and Parman, in Dallas, Texas, were made under most favorable circumstances and conditions. The experiments of Hutchison were made at New Orleans under climatic conditions rather less favorable. In the one instance the last survivors

succumbed in less than eight weeks; in the second, the fungus disease left no survivors after thirty days. It may be possible that true house-flies have survived the winter hidden away in cracks and crevices; if so, however, no one has yet proved it.

However, in small numbers the cluster-fly, *Pollenia rudis*, does survive the winter; and the clumsy, sluggish insect that buzzes around the table once or twice on the warm days of January has given rise to the tradition that the true house-fly has survived. Two or three cluster-flies have tucked themselves away in one of my thermometer shelters for the past two winters, in each case surviving zero weather. Last winter a forlorn wasp joined the settlement. The flies disappeared during the warm days in the early part of April. The wasp made the mistake of her life; she remained in the shelter until the 9th of the month, when three days of 26° weather finished her terrestrial career—evidently two much sting in the weather.

When Chief-of-Bureau Howard announced that the pupæ of the common house-fly survived the winter, I took the paints to look for them. I found a few under the leaf-bedding of a flower plot. The ground had been highly fertilized; the leaf-bedding helped to retain the warmth arising from decay. The pupæ that I examined had the appearance of vigorous life.

Experience leads me to a strong belief that house-flies, the anopheline mosquitoes, and the flying dust of city streets are the chief menace to public health—greater even than contaminated water. The body and legs of the house-fly are thickly covered with hairy growths. When, therefore, an insect flies from a garbage receptacle or from a dung pile to a table, it transfers physically, not only filth but also the germs that occur in putrifying filth. When a fly enters a room after scavenging a dung pile some, at least, of the filth it carries is blown into the air, thereby disseminating filth which becomes house-dust of a dangerous sort. In one instance it is my belief that typhoid fever was conveyed through the agency of flies from a nearby dung pile to a schoolroom.

The alimentary canal of the fly is a rich garden spot for bacteria that never fails to yield great crops. The bacteria are scattered in profuse numbers not only in the ordinary excrement, but also through the regurgitated matter popularly called "vomit spots." These are the "fly specks" that decorate walls, wood-work, windows, and chandeliers. Ordinarily they are not visible on the food-stuffs in the shops and on the table; nevertheless they are there. Almost always they can be found on the lumps of sugar in the open sugar bowls which one finds in dirty restaurants. Even assuming that a case of disease has never been traced to this possible source of infection, one position in sanitary science is undeniable: the absence of fly-spread filth harms no one.

Here is an incident that came to my notice while serving as a school trustee. A patient in an advanced stage of tuberculosis was sitting propped in an arm chair on the sidewalk of a public street. Beside his chair was a puddle of expectoration around the edge of which flies were thickly clustered. Less than ten feet away was a baby sleeping soundly,—so soundly in fact that the flies on its face, neck, and arms did not waken it. Doped? I cannot say certainly, but I have an opinion in the matter. The description needs no further amplification.

Human excrementitious matter is very attractive to flies, and the instances in which typhoid germs have

been carried by them are so well authenticated, that discussion is unnecessary. At the present time, the army camp presents great possibilities for typhoid infection, and the fly is quite as great a source of danger as contaminated drinking water. Indeed, the mortality of bullets is materially less than that of typhoid. And if the military camp escape sporadic outbreaks of typhoid fever in our present emergency, it will be about the first time on record. To permit typhoid to extend beyond the sporadic stage—to permit it to become epidemic is worse than a blunder; it is a moral crime. Will the sickening history of the Spanish-American War be repeated?

In the treatment of the house-fly nuisance it is well to bear in mind that, during a summer season, from twelve to fifteen generations of flies may come into existence. In the latitude of New Orleans, the number may be considerably greater. Therefore, if the flies have been numerous about a premises for two weeks or more, a campaign of extermination must be carried on along with one of prevention. For the former there are "spatters," fly-papers, and fly-traps. The first named is objectionable but very effective, in clearing the insects that have escaped other means. A liquid poison consisting of a teaspoonful of commercial formalin to half a pint of sweetened water is helpful; so also is fly-paper.

For out-of-door service a fly-trap is about the best thing and, within reason, the larger the better. In constructing a fly-trap it is well to bear in mind that the insects enter it attracted by odor; they try to escape by means of light. The small traps that are so numerous on bargain counters are not worth much. A wire trap about one foot in diameter and two feet high is about the most effective. The fly-trap has one decided advantage: if the fly content is killed daily, the insects cannot breed.

If the task of ridding a premises stops with extermination, the work is only half done; prevention is quite as necessary. The first essential, is a set of window and door screens. A well-made screen properly cared for lasts a long time. Iron wire screens are very short-lived. The open garbage receptacle, and the open sloop drain must first be abolished. A closely covered garbage receptacle is necessary, but, where possible, it is better to burn all refuse matter. Flies will not breed in a clean, dry back yard, and the moist filth which is apt to find lodgment there is the breeding place from which the house is infested. Wet spots about the leaders or the drains should be eliminated and sprinkled with commercial chloride of lime, or with borax. Elsewhere, a rake, a stiff broom, and an intelligent expenditure of muscular energy are the only disinfectants required. Leaf-piles and old grass-rakings that are to be used as bedding or as fertilizer should be treated with borax at the rate of two ounces per cubic foot. Stable pits should have a like application and table floors should have an occasional solution of borax. It kills the larvae and sterilizes the eggs as well.

Flies rarely wander more than a few rods away from their breeding places. They are sometimes driven two or three miles by strong winds and they are pretty freely distributed by railway trains and other vehicles. They rarely fly higher than fifty or sixty feet; and if they are found in the upper stories of high buildings they do not get there by flight.

The cause of house-flies is filth; the remedy is cleanliness. Incidentally, prevention is better than cure.

Meteorological Laboratory.

REDUCTION CURES FOR OVERWEIGHT.*

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In reducing a corpulent or bulky person to symmetry and alertness my object is to regain full body efficiency and gracefulness rather than to minimize weight.

A pleasing appearance is of almost more real desirability than the mere lifting of the burden of flesh; also the sense of well being conferred will prove the full equivalent of all effort expended. Nor is the effort I advocate too exacting nor too wearying.

A multitude have consulted me for relief from overweight during a busy lifetime spent in human conservation and reconstruction. The majority had already undergone diverse and sundry "courses" or "systems" unsuccessfully.

Here follows an outline of the simple but usually efficacious methods devised by me. They are of use to supplement other more elaborate agencies, although for my clients they usually suffice alone. The statements may seem unduly dogmatic, but lack of space prevents explaining. The evidence, scientific and clinical, will be offered on another occasion.

After sketching the different forms in which overweight is encountered, and is to be disposed of clinically, personal recommendations will be described, grouped and clinically correlated. This includes remarks on some points in dietetics, on personal conduct (hygiene) habits of life and their regulation (euthenics), especially on the fundamental requisite which is to acquire elasticity and mobility of all voluntary structures by precision in particularized acts, primitive movements, also certain postures and free exercises. None are onerous or exhausting.

Posture or attitude is a large factor in adjusting the weight bearing and supporting structures; also in learning economies in action and in repose, in tension and relaxation, hence in acquiring equipoise (orthotherapy). Respiratory education alone, or in conjunction with primitive movements, is an exceedingly useful reducer of weight, being the key to forced draft exhalation.

The chief points, or constituents, of methods I find successful in reducing overweight consist of careful regulation of conduct along the lines of orderly, particularized postural readjustments (to be specified), with due attention to diet in the manner of eating, rotation and combination, rather than in marked limitation of bulk or of food ingredients. Certain modifications must, of course, be observed in behavior, in conscientiousness, in personal hygiene. None of them are so painful or wearying as to discourage, but, on the whole, are interesting, and if faithfully observed will go far toward enticing a ponderous person to pursue and regain symmetry, activity and mental, as well as physical, alertness.

So-called dieting—that is, modifying and restricting goods taken—is, of course, the main reliance in all reduction methods, but, except in the relatively young and very robust, is liable to unduly weaken. When excess weight has been lowered by mere fasting sometimes there is a real, though oftener an apparent, loss of strength. This must not continue or worse states may follow; vulnerability is thus opened to infections, notably T. B. Many corpulent persons are notoriously small eaters as contrasted with some lanky ones. Voracious appetites require discouragement though full con-

*Chiefly by kinesitherapy, graduated movements making for mobility, elasticity and poise, the results being more lasting, esthetic, and rendering one far more capable of work and play.

sideration must be given to the energy quotient and actual labor performed.

Under many conditions fasting becomes an unpleasant, often a painful, process, more so to most persons than is moderate well directed work. Important as dietetic measures are in all disorders of metabolism, it is always the active combustion of foodstuffs that keeps and holds down supererogatory structures.¹

Let me now proceed to present the special features, which are: Elasticising movements along with postures and attitudinizing, posings (orthotherapy). Respiratory training is useful alone, and more so in connection with simple primitive movements, and also abdominal supports. At first I often use a special supporting girdle and later, when the condition of the whole group of abdominal muscles is improved, these muscle masses must be kept busy doing their work every day or several times a week.

To successfully and safely deal with problems of obesity the diverse forms should be kept in mind, since treatment must vary in accord with causation and nature. These differences, however, exert less significance from my point of view, since corpulency is always of like kind whatever the degree, or phenomena whatever its origin and character and whatever be the organic status or peculiarities.

The one outstanding feature which must be assessed is the degree of vigor, the capacity for exertion, of the individual. This depends more on the original make up, quality of musculature, the cardio-vascular tone and inherent survival forces than on any form of flesh accumulation. Two major varieties of corpulency are met: (1) those due to over-nutrition and under-exercising, and (2) those due to inadequacy of the elementary mechanism—organs concerned in the regulation of bio-chemistry, energetics, vitality—notably, competency of the thyroid and the other blood glands.

All forms of corpulency are abnormal, although the mere accumulation of fat masses (lipomatosis universalis) is stoutness pure and simple, accumulation of fat deposits, and is a common feature of middle age and sedentary life, of too much appetite, and digestive power with too little eliminative power.

Those of this form may be ruddy or pallid. The pallid (anemic) type causes suspicion of some underlying error in destructive functions—i.e., capacity for reducing toxic wastes to eliminate end products. The florid (alimentary) type we may regard and deal with as mere overweight and proceed to reduce by any rational means.

If reduction of food makes little impression on bulk it may be regarded as constitutional obesity. Then there is the big made—the massive, "heroic" man or woman who began by being as a child overlarge—endowed with powerful muscles, redundant health, good nature; who was and is cheerful, placid, a trifle indolent, too good a sleeper and a valiant trencherman—a Falstaff.

These I would nominate "polysarks" (polysarkia—too much flesh, muscles rather than fat).

The pallid type may or may not be anemic, but usually some lowering of the powers of combustion is in evidence, and they are less endowed with gratuitous vigor and endurance. These tend to breathlessness on exertion; too much water as well as fat accumulates in the tissues.

More than half of the corpulent brotherhood come of overstout parents; often from several generations.

¹There are conditions of flabby fatness with tumultuous heart irregularities when the Karrell milk diet and three weeks in bed surpasses all other methods. Also in big, lusty florid people a fast from two to three weeks is the best beginning for regulative measures.

I have one friend, a physician, whose five brothers and himself average 250 pounds a piece. Everyone is a veritable hercules. The ancestry was all massive and also long-lived, as well as highly intelligent and energetic.

To this tendency to bulkiness is commonly added that of goutiness, arthritism, joint susceptibilities, "lithiasis," asthma, eczema, migraine, etc. all conditions in which oxidation is slowed tardy and often imperfect, needing help or disasters follow. The best help here is self help—self compulsion in doing.

For purposes of successful relief measures one needs to determine where the fat lies in chief excess, outside or inside, under the skin (in the subdermal spaces), where it is natural enough in the overfed and needs little attention. When in large excess outside, as over the abdomen, on the breasts or hips or jowl or back, it is most difficult in late middle life to reduce. Where the fat is inside (omental), it can be reduced more or less in accord with certain indications, among which are the command one is capable of acquiring over the muscles, the tone of the walls, especially the tone of the coverings of the viscera, and also the length of time it has existed. As an example of the last point—for a woman who was big bellied as a child \$ fygr.5fitt8 anetaoos early life is capable of small reduction. Those who have grown rapidly obese in early middle life usually display loss of tone in the walls of the viscera, which become relaxed, dilated, hence much of this antero-posterior bigness is gas and fluid, hence subsides upon judicious exertions.

The principles of movements found effective in reducing over-weight are briefly these:

(1) Make use of my rule for educative or training movements whereby it is possible to secure the utmost of result with the least expenditure of time or effort, which is to always begin a movement from a position of complete relaxation, increase the effort gradually to the point of fullest tension, then hold tense for an appreciable time. For example, the fencer's thrust; the arm holds the foil poised with just enough power to support it; it is then thrust forward steadily, increasingly and accurately till the point touches the object at which time all the extensor muscles combine in fullest extension, remaining so for a couple of seconds. This I always demonstrate slowly till the act becomes habitual—e.g., count five slowly during the graduated thrust and at the limit hold tense while counting two.

This formula of procedure is applicable to any or all educative movements. It serves to train the whole involved group of muscles in accuracy and conscious control from the start (initial motor impulse) by complete co-ordination and deliberation in adjustments, in precision, in direction or aim, and, above all, in the fundamental quality—continuity in progression of muscular contractions.

Anyone who has once mastered this rule of voluntary action will come to appreciate its significance and efficacy; will be able to contrast the inefficiency of hurried carelessly applied methods.

The transformation of force in equilibrium is from the passive state at the start to the acme of action (tension) at the finish. As a test of competence it will be found that to perform a few movements by this method there will be followed an appreciable degree of muscular soreness; whereas the same movements performed in the ordinary slipshod manner, even though many times more frequently repeated, do not result in soreness.

(2) Movements to be efficacious should involve a thorough stretching of the joints of the hips, thighs,

articulations in and above the pelvis, to include not only the muscles and tendons in the leg, but buttock, the external abdominal walls, but also those big muscles in the back (erectors and twistors), on the rear of the back bone, but also those in front, the psoas. The psoas muscles lie in front of the back bone and need to be put in action when they are in full tension, and the front walls also. The required compression is thus exerted on the abdominal contents.

For this purpose I use the exercise described elsewhere as the "all fours motion."

(3) Next in importance is lying on the back, feet two feet apart, raising the head two to five inches, draw both arms to chest, hands open, fingers apart; then turn and thrusting both arms out, first one side and then the other, using graduated increments of force described above, to *point of fullest tension, and holding arms there for two seconds*; also the neck is turned in the same direction as the arms, and with increasing force. This produces a complete tension and stretching of the twisting muscles of the abdominal walls (transversale), also those of the neck, the thorax, the internal back (psoas, iliaci quadratus lumborum), and exerts a powerful compressing action on the abdominal contents, emptying both tubes and spheres as well as the fat masses.

(4) Next in importance is to lie on the abdomen, legs straight out; place the hands, palm down, and gradually raise the body by straightening the arms and extending (raising) the head up and far back as possible, chin extended to the utmost. It is of advantage to stretch the neck by *turning head far to the right and then far to the left* five or six times (as in No. 3).

(5) Another series of movements of the utmost efficacy in emptying fluids from the abdominal contents I employ. These are described at length elsewhere and consist in *pulling the abdominal walls inward and upward slowly* with the same graduated increment of force. Few people realize that the external abdominal muscles, the diaphragm, etc., are capable of acting as voluntary muscles. When they are so trained they can be made to exert a powerfully compressing effect on all the structures in the abdomen. When used in conjunction with the sidewise turning acts described above, they are capable of producing extraordinary effects on stagnation in all contained structures. Twisting by muscular action (torsion) is similar to wringing of a wet cloth. Fluid contents are expelled only less forcibly than by compression.

One final measure I will mention which, in my judgment, is of enormous value, but which some physicians regard as involving some peril. This is walking before breakfast and pursuing other gentle exercises before taking any food or very little. My personal experience is to the effect that no one agency is so capable of removing the effects of chronic disorder of nutrition (metabolism), such as obesity, gout and certain varieties of heart, blood vessels and kidneys.

One recalls that nearly all European Spa methods include this feature. To be sure, there is also the drinking of some sort of medicated water. It is a growing conviction that among the best of Spa methods are these early morning gentle activities consistent "systems" and liberal water drinking.

As to whether this before breakfast regime is likely to prove exhausting in any individual instance should be determined by an expert. Of course, it might produce a sense of weariness or fatigue at first in those unaccustomed to it, or in those whose "hearts are weak." Even in some varieties of serious heart disorder it is to be recommended. Begun cautiously and graduated judiciously

I believe it will prove of benefit to almost every one, especially every obese one whose organs are not impaired nor strength depleted. That nearly every one will profit by it, soon or late, is my experience.

In the quest of lightness of body in reduction of flesh, it is well to bear in mind that the most important considerations are first: Emptying out of the structures all stagnated fluids, blood and lymph, surcharged with vitiated by-products of katabolism.

Second: Redistribution of the fat and other undesired accumulations from the muscles which have become invaded with fat cells and body poisons; also by transferring the loose fat masses in the abdomen where they are most disfiguring and distressing—in the breasts of women, in the fat pads on hips and neck, etc. This transference of fat makes for symmetry, for esthetic effects, for proportion, for grace and beauty which have been marred by the corpulency; also it makes for greatly increased body and mind energies. Through the enhanced power of action a further and already lessening of accumulations can be secured. Whether the gross weight be affected or not is, to my mind, a secondary consideration.

Long before ponderability is materially altered desirable results can be attained. All this can be readily accomplished by the particularized movements.

Finally, the problem of reduction in gross weight is to be considered. Some degree of this can be achieved by the movements alone; occasionally, in my experience, this has been far in excess of expectation. Of course, better results can be attained by modifying the diet in certain particulars, notably in the direction of sugars, starchy foods; also in alcohol and other substances which tend to check the processes of combustion.

Indeed it is the very process of oxidation (combustion and elimination) which is especially desired to encourage and increase. After all the chief dissideratum is to teach the body to do the work it is designed to do in a more thorough and normal fashion.

This power to do so has been impaired by disuse or inadequate or unsuitable use. A training is needed; an education or re-education in not only particularized and more or less unattractive movements, but also in better forms or kinds of living, in a modified diet, in methods and habits of rest, sleep, exposure to cold—in short, in getting back into right habits of living and away from too much ease, indolence, softness and relaxation.

Conclusion.

The objects to be attained are:

(1) Gradual transmission of force from full relaxation to fullest tension, whether in push or pull or twist or sweep.

(2) Conscious control of degrees of contraction; the distribution and transmission of force, from start to finish.

(3) Regulation of direction of force, in immediate or correlated parts.

(4) Control the squeezing action of the muscles while in full contraction exerted on the contained blood vessels, the lymph channels, the fat cells and accumulations, etc., whereby fluids can be forcefully pushed along and emptied, followed by:

(5) Hydraulic reaction, or sucking up of all fluids, cells, by-products, of waste, of stagnation, and, if fat cells be in excess, to warm or heat them and the more readily draw them into the blood stream, hence to the lungs to be burned up.

(6) Twisting, torsion, wringing of the soft parts by the muscular compression.

For these and other reasons (not yet presented) it is

plain the bulky one should take pains to grasp the essential ideas and become fully habituated in performing the acts with precision and completeness.

The point I wish to impress is that: In order to induce the circulation to take up and dispose of the fat cells they must be (1) thoroughly squeezed and (2) sufficiently heated to partly soften, liquify—at least to reduce them to an absorbable fluidity.

In my experience this is best done by the deliberate intensive muscular contraction described and the long stretching movements. Fat masses which had resisted all other methods of dissipation do yield to these measures when faithfully performed.

CHEMICAL, BACTERICIDAL AND CLINICAL OBSERVATIONS ON HYPOCHLORITE SOLUTIONS WITH PARTICULAR REFERENCE TO ISOTONIC SODIUM HYPOCHLORITE SOLUTION.*

WILFRED G. FRALICK, M. D.,
New York.

After more than fifteen years of research study with hypochlorite solutions, I view their acceptance by surgeons throughout the world with no surprise. I admit, however, that I am at a loss to know why a chlorinated lime sodium carbonate, sodium bicarbonate hypochlorite solution was and is approved by Drs. Carrel and Dakin, or why they selected that method of preparation.

I would inquire also why have we not been furnished with more technical data if such data exist dealing with their investigations, experiments, etc., as it is only by such knowledge that we might follow or reproduce some of their experiments if we desire.

Our investigations which were in part conducted at the University of Chicago and at my own private research laboratory proved amongst other things that hypochlorites formed from chlorinated lime and sodium carbonate, pyrolusite or electrolysis contained insoluble salts and other impurities, were very low in available oxygen-ions (O Cl), not standardizable, unstable and less efficient.

Our experiments with chlorinated lime, pyrolusite and electrolysis hypochlorite solutions on bacteria and animals gave unsatisfactory results. The weak, "neutral solution" of the low hypochlorite concentration obtainable by the chlorinated lime method, possessed little or no blood-clot or necrotic tissue dissolving power.

We abandoned the chlorinated lime and electrolysis methods of preparing a hypochlorite solution only after exhaustive experiments had been made. Then only was an entirely different method of preparing a hypochlorite solution tested and adopted. It is this solution which I have used for many years in my surgical work as an antiseptic, bactericide intraperitoneally and intravenously.

It is an isotonic sodium hypochlorite solution.* It can be made neutral or of an alkalinity corresponding to that of normal blood. Experiments on toxins, bacteria, necrotic tissue and infected blood-clots were made to determine the optimum strength as well as the alkalinity best fitted for its bactericidal effect or for its dissolving effects upon necrotic tissue and blood-clots. The available oxygen-ions (O Cl) always abundant in this solution may be increased or decreased at will, likewise the concentration of hydroxide-ions which may be regulated at from zero to any desired alkalinity.

The action of a hypochlorite solution on bacteria and toxins or in other words, its *killing power* depends on the *available active oxygen-ions* (O Cl) its dissolving power is aided by the hydroxide-ions; this has been fully established by experiments conducted by myself and others who have collaborated with me in these investigations.**

The Cl-ions are chemically and physiologically inert.

In all cases the available active oxygen-ions (O Cl) in isotonic hypochlorite solution are vastly in excess of those which can be made available in the chlorinated lime, pyrolusite or electrolysis hypochlorite solutions.

With this knowledge before us I ask why should we use a chlorinated lime hypochlorite solution, which is low in available oxygen-ions (O Cl) when this isotonic sodium hypochlorite solution with a *higher per cent.* of available oxygen-ions (O Cl) can be obtained.

Experiments conducted on bacteria, animals and later thousands of times on human beings in surgical work have shown that by eliminating insoluble salts and impurities this isotonic sodium hypochlorite solution can be used also *intraperitoneally and intravenously*.

So well balanced is this isotonic sodium hypochlorite solution that when the available oxygen-ions (O Cl) are discharged, either in the neutralizing of toxins or the chemical destruction of bacteria, aided further by hydroxide-ions, in the tissues or body fluids, only a physiological sodium chloride solution remains as final product of decomposition.

We were forced, after thorough technical and chemical investigation, to give up what is termed the type of calcium chloride, sodium carbonate and sodium bicarbonate hypochlorite solution, to-day known as "Carrel-Dakin solution."

1st. Because of its *low concentration* of active oxygen-ions (O Cl).

2nd. Because of its insoluble salts and other impurities.

3rd. Because its chemical inconstancy makes it unfit for intraperitoneal or intravenous use.

4th. Because of its instability.

5th. Because of its low solvent power, i.e., the long contact with and frequent renewals with infected wounds required for dissolving blood-clots or necrotic tissues.

6th. Because it can be made only of low available oxygen-ions (O Cl) concentration.

The Isotonic Sodium Hypochlorite solution replaced the calcium-sodium chloride and electrolysis hypochlorite solutions after extensive technical investigation and comparative tests on bacteria and animals, together with exhaustive clinical experience.

1st. Because of high available oxygen-ions (O Cl) concentration.

2nd. Because it contains no insoluble salts.

3rd. Because it can be standardized and both oxygen concentration and alkalinity can be controlled at will.

4th. Because it is stable.

5th. Because it is isotonic and produces no osmotic disturbance.

6th. Because it is innocuous.

7th. Because in addition to its cleaning and germicidal effect on open wounds it can be used intraperitoneally and intravenously.

8th. Because it is more efficient, economical and convenient to handle.

I have used this isotonic sodium hypochlorite solution in my surgical work thousands of times as an anti-

*The paper was read by Dr. John Hubley Schell at his Cumberland Street Hospital Clinic, June 4th, on first day of meeting of the American Medical Association.

*Preparation described by author, in MEDICAL TIMES, July, 1917, pages 192-193.

**Drs. Schell, Lemberg, Allen, and others.

septic in my operations, in infected wounds, superficial and deep, in old sinuses, pus cavities of the thorax, abdomen and brain, on mucous surfaces, for dissolving necrotic tissues of soft parts as well as in many cases of bone necrosis. I have used it intravenously in anaemias, toxæmias, septicaemias and bacteriemias. I can cite cases of bacteriemia where blood cultures showed the presence of bacteria prior to using the solution intravenously and absent in blood cultures made after the infusion of the isotonic sodium hypochlorite solution.

I have never observed but slight irritation even when I have used it in a highly concentrated form locally or intraperitoneally.

I am aware that I have only scanned the subject in this short paper, but I trust that the value of my extensive observations may be measured by my affirmative statements, which I hope are sufficiently clear to enable you to judge and derive the benefit which I have from these investigations, and further to establish the priority of the author for introducing standard isotonic sodium hypochlorite solution in medicine.

A Combined Plating Method for Determining the Actual Killing Power and Phenol Co-efficient of Isotonic Sodium Hypochlorite.

In my more recent investigations in testing the bactericidal powers of sodium hypochlorite solution, I used in different series of experiments amongst others the Duyser and Lewis method as appeared in the *Journal of Industrial and Engineering Chemistry*, March, 1914, also the method now used in the U. S. Public Health Service, which is a modification of the Rideal-Walker procedure advised by Anderson and McClintock. With each of these methods we conducted many series of experiments with bacillus coli, cholera, typhoid, dysenteriae, etc., but finding a singularly large variation in the results we were forced to inquire if these methods might not be modified in some way or a new method developed which would give us more reliable and uniform results.

With this end in view, we worked out a modification of other methods, which I will described as a *Combined Plating Method*; this has proved so satisfactory that I rely upon it in my bacterial experiments with isotonic sodium hypochlorite.

The general technique followed heretofore for determining the phenol co-efficient or actual killing power of a disinfectant was to have the disinfectant act upon bacterial culture in tubes of nutrient broth. From these subcultures were made, by means of platinum loops, or by the more accurate workers with the finely graduated pipettes. The common fault of all these former methods was that they used a liquid medium for the subculture, with the result that turbidity of the bouillon tube does not show the degree of the disinfectant action, and, besides this, accidental contamination may lead to misleading results. The other fault was the using of bouillon culture with the hypochlorite, by which procedure some of the disinfectant was used up by the non-bacterial organic substance of the bouillon, and, therefore, led to bad results. In this latter case, if the disinfectant is used with organic substance extra tests should be made with known amounts of these substances.

In our later tests, the Duyser and Lewis method was used, with a modification of using, *instead of the broth culture, a carefully prepared water suspension from a 24-hour agar culture*. Of these suspensions 0.2 c.c. were put to 10 c.c. of the different dilutions of the disinfectant and to the control phenol in short, wide test tubes. After a certain time, generally 5 minutes, 1 c.c.

or less was taken out from the tubes and put into 99 c.c. of water in plain bottles. From these dilution bottles different quantities (1 c.c., 0.5 c.c., 0.2 c.c., 0.1 c.c.) were measured into Petri dishes and mixed with melted agar. After 48 hours incubation, at 37.5° C., examination of the plates and counting of the colonies were made.

Control plates were poured to ascertain the number of bacteria in 1 c.c. of the suspension used. By this method we obtained in one experiment both the phenol co-efficient and the absolute killing power.

For pouring the agar plates we used about 7 c.c. of standard agar (acidity+1).

The determination of the carbolic acid coefficient by the

Hygienic Method.

1. Prepare a 5% solution of pure carbolic acid. From this prepare a ½%, 1%, 3% and 5% solution.
2. Prepare a 5% solution of the disinfectant to be tested for its carbolic coefficient. From this prepare a ½%, 1%, 3% and 5% solution.
3. Filter the culture of bacillus coli communis through a moistened filter that has been previously sterilized.
4. The different strengths of the phenol are added to the broth.
5. The different strengths of the disinfectant are added to the broths.
6. The culture after it has been filtered is then added to the broth tube in different times (2½ minutes, 5 minutes, 7½ minutes).
7. The broth is then incubated for about 48 hours.
8. After incubation the tubes showing growth and those not showing growth are picked out, and from this information the carbolic acid coefficient is determined.

The determination of the phenol coefficient by our combined

Plate Counting Method.

1. Prepare a 5% solution of pure phenol. From this prepare a ½%, 1%, 3% and 5% solution.
2. Prepare a 5% solution of the sodium hypochlorite to be tested for its phenol coefficient. From this prepare a ½%, 1%, 3% and 5% solution.
3. Filter the culture of bacillus coli communis through a moistened filter that has previously been sterilized.
4. The Petri dishes are numbered and arranged in proper order.
5. The different strengths of the phenol are added to the seeding tubes.
6. The different strengths of the sodium hypochlorite are added to the previously arranged seeding tubes.
7. The culture is then added to all the tubes and well shaken.
8. All the seeding tubes are allowed to stand for 5 minutes and then the plates are arranged.
9. 1 c.c. of each seeding tube is put into a sterile Petri dish.
10. 10 c.c. of agar that is of about 45° C. is poured into the dish. This is allowed to solidify.
11. The plates are inverted (to prevent water of condensation from spreading over the colonies of bacteria) and they are incubated for 48 hours.
12. After the incubation period the plates are counted and the co-efficient curve is then drawn.

B. Coli.

Time of exposure—5 minutes.

Culture used—24 hours old, shaken with a few c.c.'s of sterile water.

Proportion of the culture and Sodium Hypochlorite—0.2 c.c.: 10 c.c.

Dilution after exposure—0.3 c.c. to 99 c.c. of sterile water.

Dilution for counting plates— $1/100 \times 1/100 \times 1/50 = 1/50,000$.

Organic matter—none.

Subculture media—standard agar. Reaction+1.

Quantity in each Petri dish—7 c.c.

Phenol	Colonies	Sodium Hypochlorite	Colonies
1% 1 c.c.	6	0.03% 1 c.c.	0
" 0.5 c.c.	0	" 0.5 c.c.	0
" 0.1 c.c.	0	" 0.1 c.c.	0
0.8% 1 c.c.	many	0.01% 1 c.c.	0
" 0.5 c.c.	many	" 0.5 c.c.	0
" 0.1 c.c.	7	" 0.1 c.c.	0

Phenol	Colonies	Sodium Hypochlorite	Colonies
0.6% 1 c.c.	many	0.005% 1 c.c.	0
" 0.5 c.c.	many	" 0.5 c.c.	0
" 0.1 c.c.	many	" 0.1 c.c.	0

Counting of the bacteria—dilution, 1/500,000.
0.1 c.c. plates 135 colonies.

1350 colonies in 1 c.c. of the dilution.
Average number of bacteria in 1 c.c. of the original suspension—675,000,000.

AN EXAMINATION OF HOW TO LIVE.

LAWRENCE IRWELL, M. A., B. C. L.

Buffalo, N. Y.

How to Live, by Prof. Irving Fisher and Dr. Eugene Lyman Fisk, is a manual authorized by the Hygiene Reference Board of the Life Extension Institute.

After many years' study of hygiene and vital statistics, I have formed the opinion that the hygiene of the future will not consist of a set of commands—"act according to these rules, or your life's usefulness will be impaired, and your days shortened"—which is the Fisher-Fisk doctrine—but a map of different practicable routes for persons having similar inherited characters, of similar constitution, and having almost identical ideals of life, each route having been tested and found satisfactory by a considerable number of individuals. Every one must eat, drink water, and sleep to some extent, but beyond such generalities as these one cannot go very far. Mr. Edison is usually believed to require much less sleep than the average man requires; some men live on extremely little food, and remain in good health; one man finds that mental exertion makes him physically tired, yet another takes gymnastic exercises to produce rest after mental work—and so on. Drs. Fisher and Fisk assert (p. 139) that "the laws of physiology are just as inexorable as the laws of physics", forgetting that no one knows all the laws of either science. Are they quite sure that radium does not violate any of the time-honored laws of physics? Concerning the laws of physiology, the Fisher-Fisk hypothesis that "potatoes, cereal, bread and all starchy foods are fattening" (p. 226) was disposed of by the late Professor Atwater some years ago, and his reply to this doctrine can be found in his *Principles of Nutrition and Nutritive Value of Food*, a pamphlet of the U. S. Department of Agriculture (p. 7): "the tendency to fatness or leanness is more or less a question of personal idiosyncrasy or some other little understood factor, and not decided by food or exercise alone." To put the facts in another way—in some human bodies carbohydrates and fats are much more completely oxidised than in others.

I now wish to draw attention to an excerpt from pages XII and XIII of the preface of Drs. Fisher and Fisk's book, viz: "In order that the Institute may have at its disposal the latest and most authoritative results of scientific investigations, its Hygiene Reference Board was created. The present book is the first general statement of the conclusions of this Board after a year of careful consideration." The italics which follow are not in the book. "*These conclusions are the joint product of the members of the Board, with the active cooperation of the Director of Hygiene of the Institute.* They may fairly be said to constitute the most authoritative epitome thus far available in the great, but hitherto neglected, realm of individual hygiene". If all this is true, *How to Live* must, indeed, be an epoch-making work. When the reader has reached the end

of the article which I am writing, he will be able to decide for himself to what extent the statements quoted above are true.

If, as Drs. Fisher and Fisk relate (p. 142), Cornaro's rules for hygienic living "drawn up by him four hundred years ago, are, so far as they are explained, almost identical with those given in this book" (*How to Live*), very little that is new concerning hygienic living can have been discovered since Cornaro's death about 1566.

Letter dated March 19, '17, from Dr. Harvey W. Wiley, Member of Hygiene Reference Board of Life Extension Institute:

HOW TO LIVE.

Page 48.

"Salt, pepper, and hot condiments should be used very sparingly, if at all."

"It is a wise plan to abstain from the use of more salt than is necessary properly to flavor the foods and to supply the necessary amount of hydrochloric acid necessary to digestion."

Dr. Wiley's views are evidently not identical with those of Drs. Fisher and Fisk.

Hydrogen "peroxide" has been so well advertised that its use has become popular. Believing that it will disintegrate small quantities of pus on the surface of the body, but has little antiseptic value, I doubted—and continue to doubt—the accuracy of what appears in *How to Live* concerning it.

Page 43.

"* * * all raw foods should be washed and disinfected before eating. This can be accomplished without applying heat by simply immersing all the raw foods in a 5 per cent. solution of peroxide of hydrogen for from three to five minutes."

Letter dated March 27, 1917, from Professor Leo F. Rettger, Member of Hygiene Reference Board of Life Extension Institute:

"* * * hydrogen peroxide has but weak and uncertain disinfectant properties, and I believe would be ineffective when applied as you suggest." (Method described on opposite column.)

For almost twenty years I have labored to pacify certain individuals, chiefly women, who believe that cancer is alarmingly on the increase. In *MEDICAL TIMES* of December 1914 (p. 368) I quoted the opinion of Dr. E. F. Bashford, Director of the English Cancer Research Laboratory, whose view is that cancer is not greatly on the increase in England. Prof. W. F. Willcox is a member of the Hygiene Reference Board of the Life Extension Institute.

Professor Willcox's statement in *Journal of American Medical Association*, June 21, 1913, p. 2021:

HOW TO LIVE.

Page 292.

"Cancer, another disease heavily on the increase in all civilized countries, may be combated by similar measures." (Alleged prophylactic measures against cancer on same page.)

"* * * in view of all the statistical evidence, I am inclined to hold that the increase of the mortality from cancer is apparent rather than real."

Letter dated March 21, 1917, from Prof. Willcox to L. Irwell: "Regarding cancer I take much the same position that you do."

I now ask the reader to contrast the italicized excerpt from the preface of *How to Live*, with the following words from Prof. Willcox's letter referred to above: "I do not regard myself as in any detailed way responsible for the charts or even the statistical statements the book (*How to Live*) contains."

How cancer can be combated with marked efficacy until its cause is discovered is difficult to imagine. The three methods which Fisher and Fisk assert will combat it will not be of any avail if Cohnheim's hypothesis as to its etiology is correct. Cohnheim has, it is true, been dead for more than thirty years, yet his hypothesis is as probable as any other. If Beard's doctrine that

cancer is an attempted parthenogenesis is accurate, no known prophylaxis will avail. If I am correctly informed, the microbic origin of cancer is no longer considered probable. No doubt it is a good plan to keep clean, to have your teeth scraped and stuffed regularly, to have warts and moles cut out, to marry the right woman. But the doctrine that you can with any degree of certainty avoid death from cancer by these measures is not tenable, because internal cancer may be due to causes which they do not combat.

Some fallacies never die. Among these is the prevalent fallacy that tuberculosis is an uncommon disease among Jews. Being a Jew, I am interested in, and have studied Jewish comparative pathology. The reason for the existence of the fallacy referred to is the undoubted fact that although the tuberculosis morbidity of Jews is on a par with other peoples, the mortality is very much lower.

Dr. Lawrence F. Flick, at Sixth International Congress on Tuberculosis (1908).

"A good illustration of apparent hypersusceptibility with strong immunity is found in the Jewish race. Hebrews seem to get implantations of tuberculosis very easily, but to resist its development in a remarkable manner."

Letter, dated March 20, 1917, from Dr. M. Fishberg, author of *The Jews* (1911):

"You are right in assuming that the disease (tuberculosis) is quite frequent among the Jews, both here and abroad, in large and in small cities. But the rates of mortality have always been lower among the Jews than among the people around them * * *."

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Page 147.

"* * * the Jews, a race which has lived indoors longer than any other existing race, are now probably by the same law of survival, the least liable to tuberculosis, except when exposed to especially unfavorable conditions of life."

There is, of course, no Jewish "race".

Concerning the assertion (p. 75) that supercleanliness probably explains the extraordinarily low mortality of "Jewish (sic) Rabbis", I have never seen any reliable statistics showing that Rabbis as a class live longer than other Jews. Dr. Fishberg does not know of the existence of such statistics. He suggests that "famous Rabbis" probably live long, because it takes years to become famous, and those who die young never become famous. * * * It may be said that they are as clean as the members of their congregations. I should very much like to believe that all Rabbis are exceptionally clean, but experience in Europe has convinced me that this is not true.

Although the preface to the manual contains (p. XII) the assertion that "it aims to include every practical procedure that, according to the present state of our knowledge, * * * a mental worker needs in order to keep his wits sharpened to a razor edge," although an entire chapter of about thirty pages is devoted to eugenics, although the eye is an extension of the brain, and although many brain-workers must use their eyes at night, yet all that I can discover in *How to Live* concerning correct artificial light for reading at night is contained in about fifty words, viz.: page 13, "Lighting by electricity is preferable to lighting by gas, as some of the gas is liable to escape and vitiate the air," and page 93, "eye-strain is to be prevented by scientifically adapted spectacles, by care to secure the right kind of illumination, and in some cases by systematically resting the eyes." The Hygiene Reference Board has over eighty members, but not a

single oculist is on that Board! On page 122 the very correct assertion appears that "eye-strain leads to an astonishing number of serious nervous affections * * * but, even on this page, no instructions appear concerning right and wrong illumination of rooms after darkness has set in. To my mind this is a most serious omission. (*Light: its Use and Misuse*, published by Illuminating Engineering Society, 29 West 29th Street, New York, deals with this subject).

Referring for a moment to the long chapter on eugenics, the authors of the manual explain (p. 314), what "dominant" and "recessive" mean, but they fail to give any idea of what is meant by "diabetes insipidus" and "Huntington's chorea." Outside the medical profession, very few people have ever heard of these comparatively uncommon diseases, and no one can imagine that *How to Live* was written for physicians—or others who are familiar with hygiene. A most casual reading by any one who has studied hygiene at all would convince him that the manual has been written for the uninitiated—and, I must add, by gentlemen who have little regard for absolute accuracy. An additional example of the latter fact occurs to me at the moment.

In Prof. Fisher's *Report on National Vitality*, p. 68, one reads that the medical profession has "lost hundreds of thousands of patients to Christian Science for no reason except that those patients were benefited, and greatly benefited, by C. S. after having received no benefit and often injury from the (medical) profession." When, therefore, I read in *How to Live* that some invalids die from an abnormal desire to avoid death, I at first supposed that a "scientist" might die from "demonstrating" too violently. I have been assured by Christian scientists that whenever one of their number "passes on," the reason is that he or she did not "demonstrate hard enough." What the exact meaning of these words is, I do not know. After a few moments' consideration, however, I remembered that there is a mental disorder in which psychopathic fear of death is present.

Letter from Dr. Charles L. Dana, New York, dated March 22, 1917:

"The statement you quoted (opposite column) is not correct. Some individuals are invalidated by reason of a 'depressive psychosis'. One of the symptoms of this psychosis is an exaggerated desire not to die. If they die, they die of their mental malady."

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"Some invalids die from an exaggerated desire not to die."

Page 53—"paraffin oil is especially good as an intestinal lubricant to assist the food to slip through the intestinal tube at the proper rate of progress. * * * Underweight people should not use these oils (paraffin preparations), unless properly prescribed by a physician."

Five over-weight men with whom I have talked who ingested paraffin oil without medical advice have found it of no value. The description given by one man indicates that it interfered with his peristaltic action. I know that some physicians have entirely abandoned its employment on account of the results being unsatisfactory. Although it is not a drug, its use consists of the substitution of artificial measures for normal processes and suggests to my non-medical mind the claims that were made for pepsin in digestive disturbances when first this ferment was prescribed. I wish to urge both fat and lean persons to abstain from ingesting paraffin oil except when instructed to do so by a physician. Two

highly competent surgeons have informed me that long-continued ingestion of this oil is most undesirable, even when the patient is over-weight. They speak from experience.*

Page 99—"Dancing combines wholesome exercise, social enjoyment, and the acquirement of skill and grace * * *."

Against the idea that dancing is a "wholesome" form of exercise, I strongly protest. In no other circumstances do boys come into such close proximity with girls. In fact, in no other circumstances would moral girls allow men to act as they do when dancing—that is, to place their arms around the girls' waists. I am assured that dancing in close contact with the opposite sex arouses the sexual instinct of some young men to such an extent that after it they sometimes feel compelled to "get relief" by sexual indulgence. This, as explained to me, means a visit to a house of prostitution, after which visit an attack of gonorrhea may, of course, be expected.

Dr. Winfield Scott Hall, of Chicago, who knows much of this subject, agrees with what I have written. He has sent me a page from the appendix of one of his books. Although he does not mention the name of the book, I append an excerpt from this page:

"What influence has dancing upon the young man's solution of his sexual problems?"

It hardly seems possible that a virile, husky young man, in his early twenties, could be subjected for several hours to the conditions of the modern dance hall, where he is brought into very close physical contact with young women, dressed to expose their secondary sexual features, perfumed to excite in a man his hereditary sexual instincts; held so close to his partner in the round dance that he is conscious of every movement of her limbs, and all of these under the influence of artificial light and music—I say, it is hardly possible for a virile young man to be subjected to all these conditions without experiencing an extreme sexual excitement. That such an experience often repeated not only does not simplify the young man's problem, but seriously complicates it is not a matter of doubt on the part of any one who has studied these problems. All specialists in this field concur in the belief that the round dance, with its 'turkey trots' and 'bunny hugs', seriously complicates the young man's sex problem."

Drs. Fisher and Fisk evidently do not realize that so-called "round" dancing tends to increase fornication, and, therefore, to augment venereal diseases. The public dance hall is, for girls, a little less dangerous than the back room of a saloon, to which room it not infrequently leads even when the two are on opposite sides of the street.

Excessive meat-eating is undoubtedly injurious, and very many Americans probably eat too much meat. But the "contests" described in *How to Live* (pp. 198-209), are very unsatisfying from an impartial standpoint.

Referring to endurance as demonstrated by ability to hold out the arms horizontally, and to bend the knees deeply, the stated facts are not sufficient to make detailed discussion an easy matter. I assume, of course, that all the "subjects," including nurses, were men. No information is given as to age or weight. If any man in good health practises any "stunt" regularly, even running up thirty or more stairs, there is no doubt that after a time he will be able to perform that particular exercise with less exertion, more rapidly and a greater number of times than a man of the same weight in equally good health, who has not practised the "stunt" concerned.

Profs. Fisher and Chittenden are advocates of, and probably adherents to, an extremely low protein diet.

It, therefore, merely eating a minimum quantity of protein will enable anyone to hold his arms horizontally for half an hour, and to deeply bend his knee five hundred times in succession, these gentlemen ought to be able to accomplish something in this direction, assuming, of course, that they are in good health. There is, however, no published evidence on this point one way or the other.

Let me emphasize the position which I take. Excessive protein consumption is injurious, and probably reduces endurance, but what is excessive for one man weighing 150 lbs. may not be excessive for another of the same weight. I refuse to believe that, with our present knowledge, a maximum protein standard suitable for all men of equal weight can be arbitrarily fixed.

Prof. Fisher's first experiment probably proves that the Yale athletes who are accustomed to a high protein and full fleshed diet eat too much meat. I cannot see that it proves anything else.

The second experiment appears to me to prove what most college men know—that students as a class eat too fast, and as a consequence of bolting their food, eat too much of the foods which can readily be swallowed without much chewing, chiefly tender meat. To chew one's food well is most desirable, indeed, necessary, but to adopt Mr. Fletcher's method is, in my opinion, a fad.

It is well known that if anyone possessing ordinary ability to add columns of figures makes a practice of adding such columns every day for some weeks, the rapidity with which he can accomplish his task will increase regardless of his diet, assuming, of course, that he is neither greatly overfed nor starved. This well-recognized fact explains Prof. Fisher's mental test.

College boys in training almost always improve in endurance when being trained for athletic events in consequence of regularity in diet and exercise, although the diet may be very high in protein.

For these reasons, I consider Prof. Fisher's conclusion concerning his second experiment, a *non-sequitur*—a case of confounding *post hoc* with *propter hoc*. The exact words of the conclusion are (p. 208): "That we are correct in ascribing the results, especially in endurance, to dietetic causes alone, cannot reasonably be doubted when it is considered that no other factors of known significance were allowed to aid in this result."

Page 29—"According to what are regarded as the best investigations, it (the right proportion of protein), is generally about 10 per cent of the total number of heat-units consumed * * * that is, 10 calories of protein out of every 100 calories of food." This means that if 2500 calories are consumed per day, 250 calories should consist of protein. As a gram of protein will produce 4 calories, 60 grams will produce 240 calories. Sixty grams is sufficient protein, according to Prof. Chittenden's standard, for a man weighing 150 lbs. When Drs. Fisher and Fisk use the words "are generally regarded as the best investigations," they leave the reader in doubt as to what investigations, except Prof. Chittenden's, they mean. Of course, Prof. Chittenden's investigation is well recognized as of importance, and it no doubt proves that many people weighing a hundred and fifty pounds do not require the daily allowance of one hundred and eighteen grams of protein given in the Voit table. But it does not prove that 60 grams per day are sufficient for every man of the weight named. That Prof. Francis G. Benedict was not convinced by Prof. Chittenden's investigation may be

*At Atlantic City meeting of American Pharmaceutical Association, Sept., 1916, Dr. R. F. MacDonald said that his experiments on animals showed that all the paraffin oil ingested is not excreted with the feces, and that the retained oil produces gastro-intestinal disturbances.

learned by reading his article in *American Journal of Physiology*, Vol. XVI, No. 4, (Aug., 1906). As Dr. Harvey W. Wiley is a member of the Hygiene Reference Board of the Life Extension Institute, and as *How to Live* represents "the conclusions of the members of the Board," (preface p. XIII), his opinion must be very valuable. (Letter, dated March 19th, 1917). "His (Prof. Chittenden's) theories in regard to diminishing the quantity of protein have not been supported by the great majority of scientific dietitians and I believe they are substantially erroneous. My own view is that for a man of 150 pounds weight, engaged in ordinary activities, at least 100 grams of protein per day should be supplied."

How to Live does not explain what proportion of ingested calories are excreted unused; it does not explain what proportion of animal protein is utilized by the human body, and what proportion of vegetable protein is so utilized; and it omits any reference to the fact that the nitrogenous material contained in vegetables is not always true protein. According to a table on page 175, of 100 calories of mushroom (215 grams), 31 calories consist of protein, making mushrooms highly nitrogenous for vegetable food, and reviving the old-time story that mushrooms are "vegetable beefsteak." No one who is familiar with the facts, however, believes that the fungus referred to contains any considerable quantity of true protein.

Messrs. Fisher and Fisk have omitted to tell their readers that every form of what appears to be protein will not repair the waste of the human body. Gelatin, for example, will not do this, and the investigations of Prof. Osborne of Yale indicate that zein, the protein of maize, has a similar defect. No physiologist asserts that chemical composition is a complete guide to food values. Apart from other facts, elementary chemistry teaches that two substances may have identical chemical formulae, and nevertheless be entirely different (metamerism).

The second half of page 37 contains examples of the dogmatism, and the loose reasoning which prevail throughout *How to Live*. "The growing infant needs the maximum proportion of protein." No evidence in support of this assertion is vouchsafed, and the fact that the average growing infant, while living on its mother's milk, does not take as much vigorous exercise as the growing boy or girl of between eight and fifteen years of age is ignored.

Again, "in the dietary of the domestic animals, the infant's food, the mother's milk, is richer in protein than the food of the grown animal." Evidence in support of this hypothesis is not presented. As roots are low in protein, and legumes are high, as the food of all domestic animals is not identical, and as the milk of some domestic animals contains more protein than that of others, considerable research would be necessary to ascertain the exact facts.

In comparing the diet of the man of today with that of the lower animals, existing conditions, not those of prehistoric times, are unquestionably the conditions to consider. If man was ever a strictly herbivorous animal, that period has long passed. To argue, therefore, as Drs. Fisher and Fisk argue, that "an analysis of human mother's milk affords a clue to the maximum protein suitable for (adult) human beings" because the milk of herbivorous mammals contains more protein than their food, is fallacious, even if the latter hypothesis is strictly accurate.

Exigencies of space now compel me to turn to the statistical charts. I have merely examined a small number of the most obvious errors which the book contains. Very many more of its statements could be challenged. Examples of Prof. Irving Fisher's devotion to accuracy, and his knowledge of vital statistics may be found in Cincinnati *Lancet-Clinic*, Feb. 18, 1911.

I am not impugning the motives of Drs. Fisher and Fisk. I have no doubt that their sole object in writing their manual was to benefit the people of the United States. The results of their errors, however, are exactly the same as if they had wilfully misled their readers. In effect, the assertion, for instance, that hydrogen "peroxide" (dioxide), will disinfect raw foods, when promulgated by Drs. Fisher and Fisk, is quite as injurious to a limited number of people as if it had been put forward in an advertisement by some unscrupulous maker of the preparation. No one familiar with general hygiene could, I think, read *How to Live* with any degree of care without marvelling at the presumption of its authors in attempting to give expert advice upon such an all-important subject.

The purpose of the charts on pages 283-292 is to demonstrate that there is an "unfavorable trend of mortality in this country" from diseases "which affect chiefly those in middle life and old age" as compared with other civilized nations (p. 282).

As evidence that this dictum is not generally accepted by experts, I offer a quotation from a paper by a prominent statistician.

Page 281.

"A rising mortality in elderly life is something almost peculiar to the United States. It is not exhibited in the mortality statistics of the leading European countries."

Mr. F. L. Hoffman, of Prudential Insurance Co., in *Facts and Fallacies of Compulsory Health Insurance*. (Prudential Press, 1917), p. 39: "The allegation frequently made that 'deaths from degenerative diseases are rapidly-increasing' in this country is not in accord with the facts. The observed increase is more apparent than real on account of changes and improvements in diagnosis and changes in the statistical classification of the causes of death. The mortality from certain diseases in adult life is high as, for illustration, from cancer
* * *

Page 283—This chart is intended to prove that between 1880 and 1910, the death-rate decreased more in England and Wales than in the United States at the younger ages, and that at about the age 45, while decreases in the death rate continued in England and Wales, in the United States, the death rate increased. Let us note "Mass. & N. J., 1880-1910" in small print in the center of the chart, but "U. S." next to the diagram. Later we shall see to what extent the combined population of Massachusetts and New Jersey was numerically representative of the whole United States, but for the moment I ask why, if these two States were representative of the United States, the population of England and Wales was not representative of the United Kingdom? In 1880 the population of the former was about 25 millions, of the latter about eight millions more.

A footnote (on p. 283), says that Massachusetts and New Jersey "really constituted the registration area" in 1880. "There were also fifteen cities outside these States where comparisons were possible."

The statement that Massachusetts and New Jersey "really constituted the (U. S.) registration area" in

1880 is untrue, because, although the total population of that area in 1880 was 8,538,366, only 2,914,201 inhabitants were in the two States named, and the remainder, 5,624,165 individuals, were outside them, and were in the District of Columbia (177,624), and in cities of non-registration States.

The total population of the United States in 1880 was 50,155,783. How can Drs. Fisher and Fisk imagine that increases or decreases of death-rates in a population as small as 2,914,201 can be representative of death-rates in a population of over 50,000,000? In 1910, the combined population of Massachusetts and New Jersey was only 5,903,583, while the United States contained more than 92 million people. Here, again, the combined population of the two States named is much too small a part of the population of the whole country to be relied upon as representative of it, when increases or decreases of death-rates are concerned.

Page 284. The purpose of this chart is to demonstrate that "the mortality from diseases of the heart, blood vessels, and kidneys increased 41 per cent during the period 1890-1910, while in England and Wales, during the same period, there was a decrease in the mortality from these maladies."

Section I—apoplexy. As every physician knows, apoplexy is a symptom of cerebral haemorrhage, thrombosis, or embolism. As autopsies are more common in England than in the United States, the apparent decrease of deaths certified as primarily due to apoplexy in England may be the result of increase in number of deaths registered as primarily caused by cerebral haemorrhage, thrombosis, or embolism—or all three. The only way of making a fair comparison would be to add together all deaths from the four causes named in the United States, to do the same with deaths from the same causes in England and Wales, and then compare the totals, and calculate the death-rates.

Section II—to verify this section of the chart, deaths from diseases of "kidneys and urinary system," is impracticable, because "urinary system" does not convey a distinct meaning, and is not in accord with the *International Classification of Causes of Death* now used by almost all civilized countries. What excuse have Drs. Fisher and Fisk for not making their charts according to this classification so that verification would be simple? Perhaps "urinary system" is intended to mean "non-venereal diseases of the genito-urinary system, and annexa," number VI in the *International Classification*, but this includes some diseases not at present regarded as organic, and the chart on p. 284 refers to "organic diseases."

Section III—"heart and circulatory system"—concerning increase of death-rates for diseases of the heart in the United States, let us remember, first that there is "a tendency on the part of physicians to assign heart disease as a cause of death where there is doubt or a complication of diseases" (*Census Office Report*, 1910, p. 33), and that some form of heart disease is a convenient substitute for "tuberculosis pulmonalis" on a death certificate when the case has not been "reported" during the patient's lifetime. In this State (N. Y.), the State Health Commissioner has recently complained that tuberculosis is not being fully "reported."

In comparing death-rates in the United States with England and Wales, it is always desirable to recollect that the death-rate among the colored population in the United States is higher than among white people, and that in England and Wales colored people are very few.

For a single example, take the latest statistics: Registration Area, 1914, comprising 66.8 per cent of population of Continental United States:

	White.	Colored.
Total Number of Deaths—All Causes.....	824,319	73,740
Death-rates per 100,000 of Population:		
All Causes	1,316.1	2,196.1
Organic Heart Diseases.....	138.7	199.3
Both Forms of Nephritis.....	98.8	168.5
Cerebral Haemorrhage	79.0	87.8

Death-rates for chronic and acute nephritis are not tabulated separately in *Census Office Reports*. This omission is unfortunate, as acute nephritis is seldom a primary cause of death.

Of the colored people who died in 1914, 70,429 were negroes; the remainder were Indians, Japanese and Chinese.

The object of the above table is to support my contention that the difference between the death-rates for organic heart diseases, chronic nephritis, and cerebral haemorrhage ("apoplexy") among the white and colored inhabitants of the United States is sufficient to vitiate comparison of death-rates for those diseases of United States with England and Wales, unless all statistics referring to negroes are excluded.

As is well known, the cancer death-rate is higher among the white population—viz.: White, 80.7; Colored, 56.7 (per 100,000 in 1914).

The chart on page 285, "occupied males, increases—decreases from certain diseases," compares the mortality in 1900 with 1890 ("1900-1910 not yet available"). I have been unable to verify the diagrams. That figures for 1900-1910 were not available in 1915, is certainly very remarkable, if it is true. Upon appealing, as a final resort, to the *Department of Vital Statistics of the Census Office* for total deaths from diseases of the nervous system in 1890, 1900, 1910, some figures were sent to me with the remark which I had confidently expected that "the total number of deaths from these diseases for the years above mentioned are not comparable as changes have been made at different revisions" (of the *International Classification of Causes of Death*).

In addition, the great decrease of deaths from tuberculosis and pneumonia shown in the chart may not be genuine decreases. Taking pneumonia, in 1909, there were 70,033 deaths from all forms of this disease in the registration area, giving a death-rate of 137.7 per 100,000 of population. The following year the number of deaths had increased to 79,524, with a death-rate of 147.7 per 100,000! The increase in the population of the registration area was less than 3 per cent. In 1914, the rate was only 127 per 100,000, but the *Census Office Report* for that year (p. 33), says that "much of the decrease is more apparent than real."

The chart on p. 285, as it stands, without detailed explanation, figures for 1910, and information as to what diseases are included in the term "urinary," is of little significance.

On account of the length of this article, criticism of the remaining charts is omitted.

How to Live commences with a portrait of Hon. William Howard Taft, Chairman, Board of Directors, Life Extension Institute. It is a most pleasing picture, but conveys no suggestion of a low-protein, minimum-flesh diet.

As I am not a physician, I know extremely little of strictly medical subjects. With very few exceptions, this article does not deal with them, and in those cases in which it does, authorities are quoted.

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PELLAGRA.

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In the bulletins of the Ohio State Board of Health pellagra is tabulated as a disease of "unknown origin." The agnosticism of this classification is in marked contrast with the claim that pellagra is caused:

1. By eating spoiled maize.
2. By the bite of an insect.
3. By an intestinal parasite.
4. By contagion.
5. By a restricted diet.
6. By colloidal silica in drinking water.
7. By the streptobacillus pellagrae.
8. By the consumption of sugar-cane products.
9. By cotton-seed oil.
10. By infection from the stable fly.

Summarizing the evidence adduced in support of these several contentions: Dr. Bezzola believes it is something more than a coincidence that pellagra first appeared in Italy at an epoch just subsequent to the period in which the use of maize became general, so as to constitute eight-tenths of the workmen's diet.¹

In this connection he cites Marchand, who in 1826 described cases of pellagra occurring in southern France at the time when the use of maize had reached its maximum. With the reduction of maize cultivation and of Indian corn as a food, pellagra soon disappeared from that region. His conclusion is that historical evidence, statistical and clinical observations and laboratory experiments offer concurrent proof of the existence of a close causal relation between maizenic food and pellagra. *Ib.*, p. 168.

Prof. Devoto holds similar views. "Lombardy has seen pellagra disappear," he explains, "because the maize diet has been reduced; because the use of spoiled maize has been abandoned; because instruction and economic prosperity have increased; and because a mixed diet has been made available."²

Subsequently he reports that twenty years ago there were nearly 20,000 cases of the disease in the six provinces, Milan, Bergamo, Brescia, Cremona, Verona and Pavia. "In April, 1911 (the season of the year most favorable to the development of the infection), it was with some difficulty that, in the same provinces, 40 patients with pronounced symptoms of pellagra could be assembled for study and demonstration" at the Milan clinic.³

The assumption that pellagra exists in localities where maize is not a part of the diet gave Devoto occasion in a later publication to remark that in these circumstances the diagnosis is wrong. Lombroso was of the same opinion.⁴

Dr. Guido de Prohizer attributes the pellagrogenic property of spoiled corn to the toxins which mold develops in the maize.

At a conference of State and territorial health officers with the Public Health Service at Washington, D. C., May 13, 1915, Dr. Harris of Georgia warmly advocated the moldy corn theory of the origin of pellagra, adding, "I am not exaggerating when I say that every pellagrologist of the first rank in Europe is firmly convinced that maize is responsible for the disease."⁵

Controverting this opinion, Sambon maintains that pellagra was known in Europe long before the introduction of corn from America. He asserts also that the geographic distribution of the cultivation and con-

sumption of corn does not coincide with the distribution of pellagra, while prophylaxis based on the corn theory has proved futile. Sambon believes in the protozoic origin of the disease and its transmission to man by the bite of *simulium reptans*.

In the United States a commission appointed to investigate pellagra (Drs. Siler, Garrison and MacNeal) report that during the year 1913 their work in Spartanburg, S. C., has led them to reject the theory of a dietetic cause of pellagra, and to regard contagion as an important factor in spreading the disease.⁶

Goldberger, Waring and Willets report as the net result of their researches concerning the etiology of pellagra that it is caused by a defective diet. In respect to treatment they write:

"As long as symptoms of pellagra are perceptible we prefer to exclude all corn products, not that corn is not a wholesome and nutritious food, but because the occurrence of pellagra is commonly, though by no means exclusively, associated with the consumption of a diet in which corn forms a disproportionately large part."⁷

In support of this theory the authors relate their experience in an orphan asylum where 75 cases of pellagra occurred in 1913. Under a modified dietary "not a single case is known to have developed this year (spring and summer, 1914) among a total of some 234 of the children of this orphanage."⁸

How much value should be attached to such data is not clear. The nature of the dietary in 1913 (when pellagra was prevalent) is not disclosed, so that there is no clue to its defects or ill-balance; nor are we informed as to what particulars and to what extent the diet was "modified" in 1914 so as to eliminate the hypothetical *materies morbi*.

One year later these authors resumed the subject and embodied in an article published in Public Health Reports of October 22, 1915, their conclusion that a diet containing suitable proportions of the fresh animal and leguminous foods is a preventive of pellagra. The adoption of such a diet in an orphan asylum at Jackson, Miss., resulted in the nearly total elimination of the disease in 1914. Seventy-two pellagrins in the Georgia State Sanitarium were similarly dieted in 1915, and up to date (October 1, 1915) none of the group has shown any signs of a recurrence of the malady.

The *Jour. A. M. A.* of November 20, 1915, referred editorially to the report of Goldberger and his associates, declaring that "the value of their studies from both public health and economic standpoints may be compared to those of the discovery of the relation of diet to beriberi or the mosquito to the transmission of yellow fever."

Experiments were instituted by Goldberger to ascertain the effect of "a pellagrogenic diet." Eleven persons underwent the test and six became pellagrins.⁹

In order to test on human subjects the communicability of pellagra, Surgeon Goldberger experimented with sixteen persons who had voluntarily submitted themselves for the ordeal. The tests were applied to determine the infectivity of the blood, and of the secretions and excretions of pellagrins. The author's conclusion is that

"These experiments furnish no support for the view that pellagra is a communicable disease; they materially strengthen the conclusion that it is a disease essentially

¹ *Il Lavoro*, May 30, 1911.

² *P. 268*, *Il Lavoro*, Sept. 15, 1912.

³ *Il Lavoro*, Mar. 15, 1914.

⁴ *Il Lavoro*, April 15, 1914.

⁵ *Pub. Health Bul. No. 72*, Oct., 1915, p. 122.

⁶ *Jour. A. M. A.*, Sept. 26, 1914.

⁷ *Public Health Rpts.*, Oct. 23, 1914, p. 2823.

⁸ *Ib.*, p. 2825.

⁹ *Public Health Rpts.*, Nov. 12, 1915, p. 3336.

of dietary origin, brought about by a faulty, probably 'deficient' diet."¹⁰

The theory of Alessandrini and Scala respecting the etiology and pathogenesis of pellagra is founded on the allegation that the disease exists only in those localities where the ground water is heavily charged with silica. According to this theory, the prevention of pellagra is to be found in proper drainage, and the treatment of pellagrins consists in the administration of sodium citrate.

Dr. E. M. Perdue of Kansas City, Mo., is an enthusiastic advocate of this theory. In *American Medicine* for March, 1917, he writes:

"The cause, prevention and cure of pellagra were announced to the scientific and medical world in May, 1913. The announcement came from the laboratories of one of the greatest universities of the world. The research which had been conducted for years according to the most scientific criteria is complete, conclusive, incontrovertible. In the brilliant monographs detailing this research Profs. Alessandrini and Scala of the Institute of Experimental Hygiene of the University of Rome, make the following statements as to the etiology of pellagra:

1. Pellagra is a chronic acidosis caused by colloidal silica in drinking water coming from clay soils.

2. Pellagra is a disease strictly localized and contracted only in those regions where the water commonly drunk originates in clay soils.

3. Pellagra has no relation to diet, work, domicile or sanitary environment." P. 181.

Several other subsidiary or divergent theories are currently reported. "Is Pellagra Due to an Intestinal Parasite?" Under this interrogative title Dr. B. W. Page published a brief communication in the *American Journal of Public Health* for October, 1914, describing a parasite resembling the amoeba, though smaller, which has been found by him in "seventeen different pellagrins."

The stable-fly is the agent transmitting the infection of pellagra, in the opinion of Dr. E. H. Marsh of Brooklyn, N. Y. (*MEDICAL TIMES*, January, 1915.)

Dr. Blosser of Atlanta believes that sugar-cane products are the main cause of pellagra in the South. Exclusion of all partially refined sugars and sugar-cane syrups from the diet of pellagrins has enabled him "to cure 121 out of 133 patients treated."¹¹

Is there a sugar-cane toxin, similar to that in spoiled corn? If so, the chemists should be able to isolate and identify it.

At the sixth session of the American Association of Clinical Research at Baltimore, November 7, 1914, Dr. Aulde of Philadelphia presented a paper in which he expressed the conviction that "magnesium infiltration is probably the cause of pellagra." (*MEDICAL TIMES*, June, 1915, p. 193.)

Cellini's opinion of the cause of pellagra may be inferred from the fact that he treats pellagrins with lime and cures them in a "relatively short space of time, without any change having been made in their mode of life, surroundings or diet."¹²

At the third triennial meeting of the National Association for the Study of Pellagra at Columbia, S. C., October 21 and 22, 1915, Dr. Mizell of Atlanta said:

"The one essential, primary cause of pellagra is the consumption of excessive amounts of fat of the cottonseed oil group."¹³ The linolein in these oils causes the disease, it is said.

Within recent years researches have been successfully conducted by Lavinder, Goldberger and other American scientists with the object of solving, or more clearly stating, pellagra problems of the United States.

These studies constitute a suggestive supplement, and give a necessary key, to clinical observations. Studies in pellagra by Assistant Surgeon Sundwall and Surgeon Francis of the U. S. Public Health Service are published as Hygienic Laboratory Bulletin No. 106, January, 1917.

The work is a valuable contribution to the sum of knowledge of the subject. For lack of space, only a few of the conclusions reached by the authors can be here cited:

3. "From a pathological standpoint there can be no objection to the classification of pellagra along with rickets, scurvy and beriberi as dietary diseases."

4. "A most rigid examination of numerous tissues obtained from pellagrins revealed no micro-organism that can be regarded as a specific etiological factor."

5. "Pellagra, then, possesses no characteristic cell alterations, but the pathological changes are those resulting from malnutrition. Consequently it is erroneous to assume that certain substances such as silicates, aluminates, etc. are the etiological factors of pellagra, as some have done, because of the pathological changes that have been induced as a result of the administration of these substances." P. 68.

Finally Surgeon Francis declares, "The work here reported furnishes no support for the view that pellagra is an infectious disease." P. 102.

These researches sound the knell of several speculations as to the origin of pellagra. It is hoped that the ghosts of dead theories may never again "revisit the glimpses of the moon."

But since so great diversities of opinion exist concerning the genesis of pellagra, and observers disagree respecting the clinical conditions and circumstances that give rise to the disease, it may perhaps be wise to suspend judgment as to nebulous hypotheses until more light is shed on the subject. In the meantime, students of pellagra can afford "to labor and to wait," as Jenner worked and waited until certain that his theory was "founded on a rock," and as Darwin waited till a cumulative weight of evidence confirmed his working hypothesis. The premature announcement of unverified theories is dangerous; and men of science are servants of the truth, not slaves of dogma.

Nevertheless, the incidence of pellagra is so extensive and so disastrous that strenuous and persistent efforts must be made to discover both the cause of the disease and means of preventing it. In Alabama, for example, the malady counts an increasing number of victims year by year. The State health officer, Dr. Sanders,¹⁴ says that "the first diagnosis of pellagra in this country (?) was made in 1906 at the hospital for the colored insane" at Mt. Vernon, but physicians now recall the fact that cases occurred in the 90's, though they were not able then to identify the disease. Five hundred deaths from pellagra were reported in the State in 1913, and nearly seven hundred in 1914 at the end of October.

In Mississippi the situation is still worse. In the year 1914 there were 1,192 deaths from pellagra in that State, the disease ranking third as a cause of death. This is an increase of 47 per cent. over the number dying from this cause in 1913. In 1914 pellagra "caused more deaths than typhoid fever, smallpox, measles, scarlet fever, influenza, epidemic cerebro-spinal meningitis and acute poliomyelitis combined."¹⁵

During the month of March, 1917, 399 new cases of pellagra were reported in 66 counties of Mississippi.¹⁶

Such figures are a challenge to the spirit of the hygienist.

The physician who declines to take service because he "has worked up a large practice" or has "gotten a coveted hospital appointment" will be a marked man.

¹⁰ Pub. Health Rpts., Nov. 17, 1916, pp. 3159-3170.

¹¹ Jour. A. M. A., Feb. 6, 1915.

¹² London Lancet, Apr. 17, 1915.

¹³ Jour. A. M. A., Dec. 18, 1915, p. 2195.

¹⁴ Ala. Bd. of Health Rept., 1914, pp. 47-49.

¹⁵ Rept., Miss. State Bd. of Health for the biennial period ending June

¹⁶ Pub. Health Rpts., May 4, 1917, p. 563.

THE TECHNIC OF NEOSALVARSAN ADMINISTRATION.

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The popularity of neosalvarsan as an antisyphilitic agent has resulted in a wide variety of administrative methods, each of which is doubtless satisfactory to the individual operator. The kindly reception accorded the publication of a recent article on the technic of administering salvarsan* and numerous inquiries for more detailed information regarding the use of neosalvarsan, affords the reason for the presentation of a topic which will appear elementary to the experienced user of the Ehrlich arsenicals.

We must bear in mind, however, that the medical profession has only scratched the surface in the use of salvarsan and neosalvarsan. We are prone to consider them in their antiluetic aspect alone, unmindful of the fact that they are practically specifics in yaws, relapsing fever and other spirochetal tropical diseases. Physicians in malarial districts are finding salvarsan of the greatest value in the treatment of malaria, and some internists believe that in Ehrlich's 606 we have arsenic in a form which can be utilized to particular advantage in all conditions demanding arsenical medication. For these reasons the need of a simple and effective technic for neosalvarsan administration is readily apparent.

It was formerly my custom to employ dilute solutions of neosalvarsan, using from 20 to 30 c.c. of freshly distilled sterilized water to each decigram of the product and to inject it by the gravity method. Experience demonstrated the needlessness of throwing so much fluid into the circulation and this method was abandoned in favor of the concentrated solution, which is now employed entirely. From 25 c.c. of freshly distilled sterilized water I have reduced the amount of fluid to from 5 to 10 c.c. and have been encouraged by such excellent results that the concentration will be continued until some better method is presented.

The apparatus necessary for the injection of neosalvarsan includes a small Luer syringe of from 10 to 20 c.c. capacity, a Fordyce needle with a long, sharp cutting edge and a glass tumbler, alkali free if obtainable. When the patient presents himself for injection he should have eaten nothing for at least six hours and he should have had a thorough bowel evacuation before the injection, induced by oleum ricini or magnesium sulphate. The urine should be normal. The syringe, needle and tumbler must be boiled in distilled water, and the same aseptic precautions observed that would be followed in any operation. Into the sterilized tumbler pour from 5 to 10 c.c. freshly distilled and sterilized water. (Permit me to emphasize the necessity of using water that has been distilled, as well as sterilized, not more than six hours before the injection. In this day of inexpensive office stills and sterilizers there is no excuse for purchasing "drug store" distilled water, unless the druggist distills the water in his own establishment.)

Dissolve the contents of the ampule of neosalvarsan in the water, by sprinkling it equally over the surface.

*A Satisfactory Technic for the Administration of Salvarsan and Neosalvarsan. MEDICAL TIMES, Vol. XLV, No. 3, p. 78, 1917.

This will speedily go into solution. Draw the fluid up into the syringe, which should then be wrapped in a sterile towel. The patient with shirt and collar removed should be laid on the office or operating table, with the bared arm resting on an instrument table. The operator thus can have his working tools directly at hand. Having made certain that the circulation is not restricted by a tightly rolled up undershirt sleeve, the arm in the region of the elbow is carefully washed with alcohol or painted with iodine. A tourniquet—a rubber catheter serves admirably—is applied and tied as one ties a half bow knot, so that it can be readily loosened or it is held tightly in place by a pair of artery forceps. The veins stand out and usually the operator has his choice of several. If the veins do not become prominent under compression slap them smartly, which procedure usually proves effective.

The vein of choice is the cephalic just below the point where the median basilic is given off, as at this place a level spot is offered, whereas a little higher up the bend of the elbow is encountered with its attendant inconvenience for the entrance of the needle. If for any reason this vein is not available, the basilic, just above or below the junction with the median antibrachial offers the most attractive site of entrance. Sometimes the accessory cephalic is large enough for the easy insertion of a needle and as a *dernier resort* we are sometimes compelled to use the median antibrachial near the wrist or one of the oblique branches connecting the basilic and cephalic. These veins near the wrist are usually so small that much skill is required for the introduction of a needle of fine calibre.

Having chosen the vein and steadying it between thumb and forefinger, the patient tightly closes his fist and the Fordyce needle is plunged directly into the vein. Its proper entrance is indicated by a rapid backward flow of blood through the needle, either in spurts or a steady stream. The needle should be moved from side to side to make certain that its sharp point is not caught in the lumen. The operator then rapidly attaches the syringe to the needle and allows three or four cubic centimetres of blood to flow back into the syringe.

The tourniquet is released by a quick pull at one end of the catheter or opening the artery forceps and the neosalvarsan, now changed from a light yellow to a dark red, is injected **very slowly**. From one to two minutes should be consumed in the injection.

When the needle has been removed from the vein, the oozing can be controlled by digital pressure, after which the wound of entrance can be sealed with collodion. This obviates the necessity of a bandage. The patient is allowed to remain on the table in a recumbent position for from 15 to 30 minutes and is then sent home with the strict injunction not to eat for four hours and then only a slice of toast and a cup of tea, or a glass of milk.

The syringe, needle and tumbler are again boiled in distilled water.

If the needle for any reason pierces the lumen of the vein sufficiently to cause infiltration, it should be removed, and if only a small amount of the neosalvarsan has escaped the swelling can be reduced by gentle stroking toward the hand. If the swelling is pronounced it is better to inject into the middle of the tumor a few cubic centimeters of distilled water. This will reduce the chance of necrosis to a minimum, as absorption will be promoted.

Such accidents occur if the point of the needle is too long; if it be so dull that much force is required to

penetrate the skin and wall of the vein, or if care is not taken to steady the vein between thumb and forefinger when making the injection.

Under no consideration should a vein be cut down upon. The tell tale scar will forever condemn the physician and will stand as a mute monument to his lack of skill.

54 Sidney Place.

ANOMALIES OF THE GALL BLADDER AND BILE DUCTS.*

ROYALE H. FOWLER, M. D., F. A. C. S.,
Brooklyn.

F. H., age 42, married, born in Germany, was admitted to the Greenpoint Hospital Feb. 2, 1917. She complained chiefly of jaundice and pain in the right upper abdominal quadrant. Two weeks before admission patient had pain in the epigastrium which radiated to the navel and to a spot beneath the ribs on the right side. She vomited, had chilly sensation and felt feverish. Pain was first of a mild character, then became more severe. It bore no relation to meals. The bowels have been constipated. Jaundice has been present for two weeks, skin itchy, urine dark and stools clay colored.

The patient has had evanescent attacks of epigastric pain for ten years, with gradual increase in severity and duration. The first attack of jaundice occurred last November and lasted for two weeks. She states that she is free from attacks during the summer months.

The past history is irrelevant. Menstrual and obstetric history negative.

Physical examination showed an obese adult female of large frame, Conjunctivae and skin icteric. Abdomen prominent, wall thick, no masses seen or felt. Moderate tenderness in the gall region. Heart and lungs negative.

Laboratory findings: Urine—dark amber, cloudy, 1014, acid albumen present, bile present, occasional pus cells, moderate amount of epithelium, moderate number of hyalin and granular casts. Blood—leucocytes 10200, polynuclears 76%. Stools—acholic.

Temperature on admission 99, pulse 84, respiration 24. Preoperative diagnosis chronic cholecystitis, cholelithiasis, common duct obstruction.

Operation: Muskowitz transverse incision. Upon opening the peritoneum liver presented numerous fresh adhesions between its under surface and omentum. These were easily separated and gall bladder sought. It was not found. There was a small nubbin, the size of a pea, lying upon the common duct. The peritoneal covering of this structure was smooth and glistening. It was incised and a lumen found with difficulty. A small probe was passed up into the hepatic duct and down into the common duct without obstruction. The head of the pancreas was enlarged. A small rubber tube was sutured into the common duct, a second placed along side it. The wound was then closed in layers about the tubes.

Postoperative notes: Jaundice increased somewhat then gradually subsided entirely. Superficial infection of the wound. The patient drained the usual amount of bile through the tube. Tube removed on the tenth day. The wound was entirely closed on April 6, when the patient was discharged in excellent condition.

Comments.

Congenital anomalies of the gall bladder and ducts include: (1) Double gall bladder (each with its own cystic duct.) (2) Bifid gall bladder (separate cavities

with a single cystic duct). Five cases of the former are recorded to one of the latter. (3) Excluding complete transposition of the viscera other anomalies may relate to abnormal position. (a) in the substance of the liver partly or completely embedded; (b) to the left of the falciform ligament in a normally placed liver; (c) the gall bladder may possess a wide range of motility because of a mesentery and warrant the designation floating gall bladder. (4) Absence of the gall bladder has been noted in seven instances. This group should include only cases of true agenesis. Intrahepatic gall bladder, destruction by pathologic processes and left sided gall bladder should be carefully excluded.

Eschner states that absence of the gall bladder is common in the elephant rhinoceros, camel, goat, deer, some species of fish, some birds and some rodents. Of the seven recorded cases in the human, two showed in addition absence of the quadrate lobe of the liver.

Readers particularly interested in the subject should refer to an article by Schachner (*Annals of Surgery*, Oct. 1916). An extensive bibliography is appended.

280 Jefferson Ave.

DOGS AS CARRIERS OF TUBERCULOSIS.

M. W. VANDENBURG, A. M., M. D.,
Mt. Vernon, N. Y.

In the fight against this scourge, the important part held by dogs as innocent carriers of the bacilli has never received the attention it deserves.

It seems all but certain, that in every distant case of poliomyelitis that occurred last year, there was a carrier from some infected place to the smitten person. No case that has been sufficiently investigated has failed to show that such was the fact.

It is not yet known whether the germs of infantile paralysis are perennial. How, then, can it be possible to limit the persistent germs of tuberculosis, the vitality of which lasts for a long time?

Clearly only by removing every possible avenue of infection.

The dog is the most persistent, the most ubiquitous, and the best qualified for a carrier of tuberculosis.

The dog gnaws every decaying bone he can find: he delights to roll on a dead mouse or rat, or a rotting carcass; he smells of all the spittle he finds on the street, and then licks his nose. With many dogs there is nothing too filthy for him to touch with his nose and lick with his tongue. No occupation suits him better than to lick a sore, whether his own or on another dog, or on a human face or hand. Then he gladly licks his master's hands and the children's faces, and plasters them with the germs he has accumulated.

It is far more than probable that the amazing spread of tuberculosis in New England has had a large part of its origin in the family dog, which has been allowed the run of the house.

Moisture and warmth are the natural breeding conditions of tubercular bacilli. The dog furnishes the conditions to perfection. He is lavish in his scattering of them, and is immune himself. Also he is indefatigable in his search for any and all places where the b. tuberculosis may reside. The dog does not live which will not steal every chance he can get, to smell of every foul place, and every reeking thing.

It is his nature, the instinct of thousands of years of ancestral practice in these pursuits, and though we may breed hair off his body, we cannot breed filthy habits out of his disposition.

Every dog in a community is a living menace of tuberculous infection. Until we address ourselves to this source, other measures will be useless.

*From the Surgical Clinic of the Greenpoint Hospital.

PERSONAL HISTORY OF APPLICANT FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY.

Give your name *in full* (including your full middle name):

The date of your birth: The place of your birth:

When and where were you naturalized (if of alien birth)?

Are you married or single? Have you any children; if so, how many?

What is your height in inches? Your weight, in pounds?

Give the nature and dates of all serious sicknesses and injuries which you have suffered:

.....

.....

.....

Do you labor under any mental or physical infirmity which could interfere with the efficient discharge by you
of the duties of a medical officer?

If either parent, or brother, or sister has died, state cause and age in each case:

Do you use intoxicating liquors or narcotics; if so, to what extent?

Have you found your health or habits to interfere with your success in civil life?

What academy, high school, college, or university have you attended? State periods of attendance from year
to year, and whether you were graduated; giving date or dates of graduation:

.....

.....

Name any other educational advantage you have had, such as private tuition, foreign travel, etc.:

.....

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:

.....

With what ancient or modern languages or branches of science are you acquainted?

When did you begin the study of medicine, and under whose direction? His residence?

.....

How many courses of lectures have you attended? Names of colleges and dates:

.....

When and where were you graduated in medicine?

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service:

What clinical experience have you had in dispensary or private practice?

Have you paid particular attention to any specialty in medicine; if so, what branch?

What opportunities for instruction or practice in operative surgery have you had?

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result:

Are you a member of the organized militia? If so, state with what organization and in what capacity.

Have you been in the military or naval service of the United States? If so, give inclusive dates of service with each organization, designating it:

In case of war or threatened war, will you accept active service for duty with the Army, should your services be needed?

What occupation, if any, have you followed other than that of student or practitioner?

Present or temporary address:†

Permanent residence:†

I CERTIFY that to the best of my knowledge and belief the above statements are true.

Signature *EB*

Date,, 191

Subscribed and sworn to before me, this.....day of.....A. D. 191

[SEAL]

[Signature and official title.]

†The candidate should give his present address for correspondence, and also his permanent address to which he desires commission sent should he be appointed.

FORM 149
MEDICAL TIMES
W. D. S. G. O.
(Revised March 6, 1912)
July 1, 1917

M. D.

OF

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FURNISHES PERSONAL HISTORY

IN CONNECTION WITH

APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

Inclosures

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NEW YORK, AUGUST, 1917

Volunteer and Obviate the Necessity of Conscription.

Again the MEDICAL TIMES reproduces the official application blank for the Medical Reserve Corps, U. S. Army, so that physicians may not be inconvenienced by being compelled to send to Washington for one.

Major Robert E. Noble, Medical Corps, the personnel officer of the Surgeon General, in a personal letter to the Editor received July 17, writes that the Surgeon General has recommended 10,252 medical men for commissions in the Reserve, but that to date only 3,743 acceptances had been received. It is impossible to understand why such a small percentage of those making application have accepted their commissions.

The Surgeon General wants 25,000 medical officers. He now has less than 6,500. It is discouraging to observe how physicians are neglecting their duty.

Must the recommendations of the special committee of the Council of National Defense be accepted and conscription of medical men become a reality?

A draft is heartless and many a man who could, by volunteering, enter a branch of medical service which would prove most congenial, would be a distinct loser in case of conscription. Drafted doctors would not be shown the consideration accorded to volunteers. They would be sent where the authorities pleased and personal preference would count but little.

Physicians, are we to allow our profession to be thus humiliated? Volunteer for the Army or Navy and Do It Now.

Your country needs you.

A Last Word.

On the eve of retiring from practice, after thirty-five years of hard work, in order to enter upon foreign service, perhaps not to return, I may be pardoned a brief retrospect of my professional experience—both civil and military.

Having long ago acquired the reputation of being a pessimist—another name for looking facts squarely in the face—I expect to be regarded as a “sore-head,” although personally I feel no bitterness towards a world which has been pleasant to live in, in spite of its rough experiences. It is expected, as a matter of course, that an old fellow will think that the former times were better than these.

I do hold this opinion, not with regard to material, but spiritual conditions, and this has been confirmed by the experience of the past three months, during which I have been actively engaged in recruiting for the Medical Reserve Corps.

Having been striving for many years to infuse life into this moribund body, I recognized the fact—early in the world-war—not only that we would inevitably be drawn into it, but that the medical profession would be required to do its part, as it has so done nobly abroad. It has been a great satisfaction to me to feel that we have been the only consistent neutrals, cherishing no bitterness toward our erring brothers, but remembering Voltaire's dictum: “*A quiconque pense il n'y a ni la langue, ni le pays.*”

We have read of the heroic self-sacrifice of the foreign medical corps, but unmoved, as if we lived in another world—a narrow world, in which we have been busy making money and pursuing our petty schemes.

We have never associated our profession with aught but peace, and are stunned and bewildered by the call to arms.

The Medical Reserve Corps has meant nothing to our profession, which has regarded it with indifference or amusement, as the fad of a small circle of doctors, who were foolishly interested in military matters of no practical importance.

It was my hope that under the stimulus of actual war no urging would be required to swell our ranks, but, after three months of strenuous effort, less than six per cent. of the whole profession has responded to the most urgent appeals and in the great State of New York, (with 5,000 doctors eligible for military service) less than 1200 have accepted commissions. To our everlasting disgrace be it said that it is now proposed to conscript the slackers and that this measure (of course impossible) seems to cause them apprehension, rather than shame.

After all, it is no surprise to me, as it is the same old yellow streak, that runs through our profession—in peace and war. Having been so long “a voice crying in the wilderness,” I am not surprised at anything. It is a trite statement that we have not the high ideals of a former generation, that money is our god, who “talks” with a louder voice than either duty or honor, but it is sad indeed that the taint should cling to us.

The first thought of the applicant for a commission is what is the pay and can he not obtain a higher rank than first lieutenant, with a few hundred dollars more.

And when the commission has been received, straightway the officer thinks not of the opportunity for useful service, but grumbles because his professional standing has not brought a corresponding emolument from the Surgeon General's office, losing sight entirely of his

utter ignorance of medico-military matters. It is not a pleasant picture, yet it is one presented every day to the weary examiner.

But the profession are not all so selfish and self-centered. Just as many of our most eminent surgeons have freely given their time and skill in the military hospitals abroad, so the generous spirit of youth and the strong, deep patriotism of middle-age have shone forth as ample testimony to the inherent nobility of human nature. The apparent cold and calculating spirit which seems to prevail is really that of the age and society in which we live. That "preparation of the spirit," which, as Roosevelt rightly said, alone precedes true patriotic service has been wanting, hence the emergency finds us unprepared, with no clear idea of what material sacrifices we shall make, and how we shall make them. They tell us, our brothers across the sea, who have suffered so bitterly, that it has been worth it all to pass through the purifying flame of war—that their countries have found their souls. So may it be with us when we begin to realize what lies before us! We need it, that fiery trial, and it will come.

My brother, Jew or Gentile, rich or poor, high or low, how shall we evade the eternal question: "What shall it profit a man if he gain the whole world and lose his own soul?" So ends my sermonette.

Ave atque vale.

H. C. COE.

Medical Junkerism.

At the recent New York session of the American Medical Association, Professor Irving Fisher sternly called to account the physician who opposes health insurance on the ground of his personal interest.

That is about the last thing that the physician considers, no matter what the issue may be—health insurance or anything else. As a rule he doesn't consider it at all. In this very respect the doctor group seems to differ from others. Medical men seem to be curiously oblivious to the operation of economic laws upon them.

An outstanding proof of the physician's indifference to his economic interests is the progress made by Professor Fisher and his associates in the furtherance of their health insurance (*alias* poor relief) propaganda. Even to-day medical men listen dispassionately to the accelerators of health insurance, although aware of their interesting, nation-wide and high-powered drives in the legislatures, instead of giving them short shrift.

Conceive of a similar machination against the whole class of university professors, a machination aiming to cheapen their labors, to lower their tone, and to make their teaching mechanical and pedagogically barren. What would be the nature of their reaction, and to what extent would they take into consideration their personal interests, as compared with the medical profession?

We fancy that we could describe quite accurately what Professor Fisher's reaction would be like.

Making Democracy Safe.

The connection between vodka restrictions in Russia and the undoing of the Czar has been pointed out by a number of writers. It seems evident that the autocratic government of Russia did not realize just how powerful their ally, alcohol, was. Upon the brutalization of the masses by gross alcoholism was founded much of the control exercised by the master class.

It is interesting to conjecture what social reforms and radical democratic progress might be inaugurated in other countries if by some magic the brutish use of

alcohol could be totally discontinued on the part of the masses. Would not that group in the community which, in the past, has tried to force restrictive measures upon the people, chiefly as an aid to industrial efficiency, find, however, in a de-alcoholized proletariat, dangerous problems upon which, like the Russian rulers, they had never reckoned carefully?

Many of the members of the group which until recently engineered the movement against alcohol represent a class having many points in common with the late exploiters of the Russian people. If such men thought for a moment that the giving up of alcohol by the masses might tend to further genuine democracy it is likely that their enthusiasm would cool to the freezing point.

It is our conviction that if the abuse of alcohol could be totally abated most radical and desirable social and political changes would be effected, and rather promptly, as in Russia. Let us hope that all the autocrats of the world will yet be destroyed by their own devices, worked out, not because of their love of fettered humanity, but because of a stupid selfishness which, designing to make worse slaves of the industrial and military armies, in the end makes of them what was least expected—freemen.

War and the Doctor.

Do the horrors and mortality of war make the army surgeon less solicitous about the *value* of human life? He, of course, was never so deeply engaged in the conservation of shattered bodies and the prolongation of life, but what about the matter of evaluation?

We believe the reactions of medical men to the military shambles to be different from those of other classes or groups engaged in war, indeed it ought to be quite evident that their reactions are necessarily different from those of the fighting forces proper, since instinct, duty and training all prompt them to save life under any and all circumstances.

Far from being brutalized, what we hear about them is like this: "The vast number of cripples produced by the present day engines of destruction has given rise to ingenious methods for making these unfortunates useful to society and to themselves."

Out of the bloody welter the army surgeon will come back with a heightened and deepened regard for human life, and with a determination to do his part toward making a repetition of the tragedy impossible.

It is the man who has been at the front who understands. And surely the high intelligence of the medical men who have seen the crucifixion of humanity must be one of the forces which shall yet make democracy safe.

Alcoholism and Birth Control.

It would seem at first thought that the disappearance of alcoholism from any human group would always go far toward effecting rational birth control, for the rise in intelligence and economic status that would be witnessed in connection with such a reform would be expected to show itself in part in this way. But among Mohammedans and Jews the practical abjuration of alcohol cannot be said to have excited any influence upon the birth rate.

It is probable, however, that among the peoples mentioned certain factors operate that would play no part with most other men. The non-alcoholized classes in this and other countries, other than those cited, certainly tend to have small families. People of the same essential strains as these non-alcoholized classes who happen to become addicted to drink show an increased birth rate.

It is our conviction that if all the people of this country, other than the special groups showing peculiar conditions, were to conform to the standards, say, of Harvard alumni, with respect to alcohol consumption, the birth rate will see a great fall.

In general, the enhancement of intelligence that goes with a rational standard of alcohol consumption makes directly for a properly balanced population.

If intelligence be low (feeble-mindedness), or if a normal degree of intelligence be lowered through the abuse of alcohol, the birth rate will be correspondingly affected.

Will Physicians Follow the Flag Voluntarily?

Watchman, what of the night?

Doctor, what of the country?

Are we, each one, prepared to do our duty by the land of our birth?

Are we ready to assume our share of effort in this great national crisis?

America is confronted with the most stupendous task in its history. The Congress has authorized the President to raise great armies and the draft is nearing completion. Thousands of physicians, now engaged in civil practice, must don khaki and go forth to protect the health of the hundreds of thousands of fighting men.

The Surgeon General of the Army has asked for 25,000 surgeons. The response has been notable, but far short of requirements. Thousands more must come forward or we shall face conscription of medical men. We confidently believe the profession will never permit such ignominy to be placed upon it. Never since the days when America emerged from the unhappy state of colonialism to full fledged national life have her physicians failed her. It is impossible to believe we have changed and not until the sad day when a medical draft will go into effect, will we believe that American physicians are so unmindful of their obligation to the land of their birth as to be compelled, "like the galley slave at night, scourged to his dungeon," to serve their country by force and not by volition.

It is an astonishing fact that among those who have given up their civil work and gone into active service, the majority have been men possessing very large practices. Many of the leaders of the profession are in the Army. Many of the recent graduates, with little or no practice are lagging behind.

What is the reason? Do our young physicians lack patriotism?

Let medical men rally to the colors and do their bit. The eyes of the people are upon them and it will be to medicine's everlasting disgrace if doctors are compelled to serve. We will be regarded as the people now regard Christian Scientist "practitioners" and others of that ilk.

The Old Practitioner.

The supercilious way in which certain medical highbrows regard old practitioners only goes to expose the highbrows' own stupidity.

Any man who has practised medicine for thirty, or forty, or fifty years develops an insight into certain phases of disease that is simply uncanny. You find it out by some accident of personal or professional association, as a general thing, and it is so marvelous and impressive that there are no bounds to your respect.

Such possession overwhelmingly neutralizes criticism that is captious and superficial, and based upon the scientific pedantry that is our present-day curse.

Snap judgment directed against the old practitioner is always stupid, not to say idiotic.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Making the World Safe for Science.

It was early in January of 1920 that Mary, the seven-year old daughter of Dr. James Morris, the eminent clinician, was stricken with diphtheria of grave type.

A few days of the dread disease and the toxins had wrought sad havoc in the little frame. The feeble pulse, the prostration and pallor, the painful cervical glands and the foul odor from the mouth of the child gave much reason for alarm. And the toxemia became even more intense as the days wore on, until finally that awful picture of sepsis that we know so well and dread so greatly in diphtheria became clear-cut and full of terror for those who loved the girl and understood the import of the signs and symptoms.

Everything possible had been done for the child—antitoxin in heavy dosage and the other accredited measures were invoked—but all seemed in vain.

Everything possible except —. Dr. Morris, on the morning of the seventh day of the disease, looked quizzically at his associate, Dr. Nathaniel Van Dyke, and a question trembled on his lips. Van Dyke had been a laboratory man for many years before becoming a clinician, and somehow or other always seemed to Morris a bit supercilious about certain things which to the Hippocratic and Austin Flint school of practitioners meant very, very much.

Van Dyke himself had gotten into ultra-scientific ways of treating the sick, and some of his old and sound resources had been more than supplemented by fashionable fads. He was a rather weak character, despite his eminence, and the good training and large experience of his earlier years of practice, under influences that were deeper and sounder than those of modern standardized medicine, had been to an extent superseded by a scientific pedantry characteristic of the new school of practitioners.

But he had not wholly forgotten all the old truths. Some were too sacred to yield place to palpable heresies, preached in the name of the canned but richly endowed medicine of the day.

And besides, he was thinking hard for the child; for his own child, not the child of Smith, the smug banker.

But the question trembled on his lips, and he did not speak.

It was Van Dyke who had framed the resolution presented to the great medical association in 1917, at the New York meeting, at about the time that the United States entered the World War, concerning the use of alcohol in medicine. That resolution had read as follows:

"It is the unanimous sense of this council that alcohol is wholly without drug value, either as a tonic or stimulant or in any other therapeutic way; that it has no food value and no value in the treatment of disease; that its only permissive use in medicine is as a preservative or in the preparation of pharmaceutical products."

Since the passage of that resolution the United States had been at war nearly three years, and was bone-dry territory. It will be recalled that at first only the manufacture of whiskey was prohibited. But later, a bone-dry measure was put through that precluded the use of alcohol even for medicinal purposes, and all forms of it, including beer and wines, were abolished.

Once again something had come over the people like that which Charles Mackay, writing in the first half of the last century, described as follows: "In reading the

history of nations, we find that, like individuals, they have their whims and their peculiarities; their seasons of excitement and recklessness, when they care not what they do. We find that whole communities suddenly fix their minds upon one object, and go mad in its pursuit; that millions of people become simultaneously impressed with one delusion, and run after it, till their attention is caught by some new folly more captivating than the first. . . . Men, it has been well said, think in herds; it will be seen that they go mad in herds, while they only recover their senses slowly, and one by one."

So fanatical had the fight against alcohol become, and so successful, that the medical men in the great societies had not hesitated to make such declarations as the resolution which we have quoted, and later, after three years of war, even more radical ones. Of course these did not alter the truth about the anociative value of alcohol in disease, but it was heresy to take any other attitude. The tyranny of so-called science vied with the tyranny of the autocratic governments of the world, and both professed to be actuated solely by considerations for humanity, justice, progress and truth. Of course, the abuse of alcohol, leading to industrial inefficiency, was the *raison d'être* of the crusade against it, laboratory pundits responding automatically to the behests of the master class even in matters of pure science, and failing obediently to distinguish between sociological evils and strictly clinical affairs. No differentiation at all, if you please; alcohol was no good for the workingman (true) and also no good clinically (not true). No half way business for these precious scientists.

We must go back to the sick room.

Morris looked irresolutely at the thin lips and hard jaw of his associate, Van Dyke, but finally managed to broach the awful subject.

Of course, Van Dyke was outraged, but as the case was hopeless, he consented to the administration of alcohol.

But how to get any, and where? Morris' resourcefulness was stimulated to the utmost, however, in the sad circumstances, and he bethought him of his disused wine cellar. That had been long ago cleaned out, but perhaps something might have been overlooked.

In a corner of the old wine cellar he found four bottles of what was once upon a time considered good whiskey. With trembling hands he gathered up the precious freight and ascended to the sick room.

The administration of the drug was started. Morris sat in his office far into the night, reading over and over again, between his anxious visits to the bedside, the words of Hare:

"On the one hand a vast mass of evidence seems to exist against the *general* employment of alcohol, while on the other hand clinical experience, too great to be ignored, stands for the continued employment of the drug. It is probable that the drug does not act as a stimulant in the ordinary sense of the term, but nevertheless readjusts the circulation or influences the protective powers of the body by affecting the blood-cells or the blood-serum or the lymph. This belief seems to find support by reason of recent experiments carried out by the author, in which he was able to show that alcohol produces a distinct increase in the bacteriolytic power of the blood in disease, probably by increasing the activity of the complemental body. This is perhaps the explanation of the good results which follow the use of the drug in clinical medicine."

The *general* employment of alcohol in medicine had been a great mistake, mused Morris, but that it had remarkable effects in special clinical circumstances could not be doubted, and it was a disgrace to the pro-

fession smugly to deny this. Why should it not be used judiciously? It seemed to him that it was the anociative effects of the drug in desperate crises that should be invoked.

Seventy-two trying hours passed before the *dénouement*. The child —

[Deleted from this point by the censor.]

The Element of Fear in National Affairs.

The part played by fear in the lives of nations, as of individuals, is manifestly very great. Evidence of fear-possession on a large scale, on the part of certain groups, is sometimes strikingly demonstrated. The very word fear appears with suggestive frequency in the press. The affected groups sometimes succeed in setting up similar terrors among the whole herd of the people, and certain desired effects are achieved.

To the sickening psychology of these groups we sometimes owe grave national crises, after which they see to it that others are placed upon the firing line.

The negro question furnishes an interesting phase of the fear craze. A writer in the *Sun* recently remarked that "we see Southern Representatives busy at the Capitol urging the unwisdom of including black American men in a universal service plan. They fear! The dominant psychic state of the Southern white man is fear. They fear the armed organized negro units."

The emotional reactions of the crowd come about through psychological mechanisms which irresistibly suggest, to the medical observer, the phenomena of anaphylaxis. So, given certain sensitizations, most violent reactions can be produced. Illustrations of this social anaphylaxis need be cited to no intelligent spectator.

The trend seems to be to sensitize the masses to mischievous slogans. Most of these involve fear, and the hate that is born of fear. The cheap movie is one of the agencies utilized to produce anaphylactic responses, as in the case of the thriller film called "The Yellow Peril." The sensitization of the English people before the war to the German peril will be recalled. Tremendous anaphylactic reactions were easily produced by the performance of such plays as "An Englishman's Home," and a perfect frenzy of fear prevailed. Upon this basis subsequent events proceeded to tragic issue the more easily.

Under the caption Government by Fright, the New York *Sun* in a recent editorial discussed brilliantly this matter of fear anaphylaxis in the domain of public administration. We herewith reproduce this editorial:

The United States at the present moment is suffering from the application to its affairs of a new theory of public administration to which text book writers will hereafter give the title of Government by Fright.

The object of the system is to reduce the public enemies to impotence and bring them under subjection by scaring our own people out of their boots and thus leading them to display those symptoms of terror which are calculated to stir the pity of even a Prussian. When this is accomplished it is planned to exhibit them to our foes, who, on beholding them, are confidently expected to swoon from sympathy, and in their unconscious state prove easy victims of our strategem.

It is admittedly difficult to drive 100,000,000 citizens into panic, and the reaction of involuntary unconsciousness on the part of our foes has not yet been empirically established; but these drawbacks are more than counterbalanced by the circumstance that the theory is psychologically unassailable.

It is true that in so large a population as ours individuals will be found who, with the best will in the world, may find it impossible to join in the general debauch, even at command of their acknowledged superiors. But these unfortunates may be ignored and treated with the same contempt that is visited upon the boor who declines to become tipsy when the other members of the party in which he has intruded are drunk.

Germany before the war was a fear-obsessed nation. An individual or a nation crazed by fear is dangerous always. The paranoiac's terror of his fancied persecutor causes him to resort to violence. And so it is with psychasthenic nations. Then are written the hymns of hate, for hate is a variant of fear.

"Before the war Germany was afraid for its place in the sun, afraid for its share of the world's commerce, afraid for its reputation as a world power, afraid of its own taxpayers, afraid for its ability to win in the coming conflict by fair fighting. Decades of subconscious fear and of exasperation at the prosperity of neighboring powers finally led to a general loss of self-control, and the strategic railways to the Belgian border were ordered."

During the prosecution of the war the German people have been frightened into believing that they are repelling the invasion of enemies bent upon conquest and the annihilation of the Fatherland and themselves. In order to secure popular support in their efforts against espionage the General Staff launched on a large scale tales of gold-laden automobiles traversing Germany from France to Russia, and stories of attempts of foreign agents to poison the water supply, and to blow up tunnels, railroads and all sorts of plants. Sickness among children was laid to candy infected with disease germs, and girls who had disappeared were said to have been shipped to the camps of the Allies. The fear aroused by these efforts reconciled the people to the brutal espionage program, and also fanned the flames of hatred enormously. So the German fears have been German-born. Her greatest peril has been from within.

One way to prevent wars would be to penalize the dissemination of social anaphylatoxin. A study should be made of fear factors and scientific use made of the results. This would be a rational course to pursue, since all people are sensitized. A cardinal principle to bear in mind is that the fear factor is an intrinsic thing, a product of the national psychology, and not justified in these times by external conditions.

It is unscrupulous, stupid and cowardly demagogues, Jingoists, profiteers and journalists who administer the doses that provoke reactions in their helpless victims. It is they who should be given a course of treatment by Dr. Guillotine.

Let all indemnities be levied against these enemies of society, and let all annexations be concerned with their holdings.

The Uncouth "Sexologist."

Why is it that so many of our sex "radicals" are types that one could not imagine worth-while women tolerating personal and intimate relations with? Where and how do these uncouth gentry get their large knowledge and experience? We confess the problem is quite beyond us.

And then aside from the question of experience, imagine, if you can, these men as teachers of sexual hygiene. Imagine them approaching or in contact with our finest types of young American womanhood, in the capacity of teachers. Of course they are all crazy to teach sexual hygiene to our young womanhood. Does not the thought sicken one to the very heart?

There is nothing more paradoxical to us than the frequent spectacle of one of these objectionable creatures smugly discussing the sex life and psychology of women with whom by no stretch of the imagination one could connect them in any sense.

To the degree that the sexual philosophy of these offensive characters is based upon intercourse with the

sub-standard groups of women, to that degree is it faulty, which accounts for the vicious connotations which we always find lurking in it.

Birth Control After the War.

Prenatal care will be the order of the day after the war, and indeed is now undergoing rapid adoption, for the high mortality among troops makes the conservation of infant life imperative. The welfare of children will give far greater concern to society than ever before, though just now, in the warring countries, childhood is being more or less blasted. In England schooling has been largely interrupted, juvenile crime has greatly increased, vicious movies are enormously patronized, and young girls who have acquired economic independence and freedom are abusing their opportunities. And so must it also be in the other belligerent countries.

It is believed by many that all sorts of schemes to increase the birth rate will be resorted to after the war. We are inclined to doubt that, and surely it would be a great mistake. One can understand how militaristic governments would wish to see a high birth rate, and one can guess what the desire of the industrial slave-drivers might be—unless the groups who postulate a nation's greatness upon military and industrial supremacy are to pass away along with the kings.

While the sexual relations of men and women will be more free, and while our moral standards are to be considerably altered, birth control will be widely practised. The fewer children born into the world will have a happier childhood. The generations now being purified as by fire will be inspired by a passion to remould our social institutions and standards, to the end that human life shall be worth living.

Brazen Pseudosexologists.

"The moralist's notion that a stern repression will divert sex activity into socially useful channels has a good deal of plausibility in it. Such sex activity, actually diverted, is at the bottom of most esthetic effort, and even a good deal of intellectual effort. All art, at bottom, is a love song; man, like the peacock, spreads his plumage when his eye grows amorous. But the trouble is this repression doesn't always repress. The sex activity attacked is not changed into something else, but into a debased and worse form of itself. Read Freud and you will understand the process; look around you and you will see it. The gusto of sex, denied normal satisfaction, is transformed into an irresistible, horrible obsession, a sort of madness."

In the foregoing passage Owen Hatteras accounts for the sex-obsessed people who lack creative powers and hence are driven back upon themselves whenever they attempt to sublimate the sexual into the intellectual or esthetic. In this light it is easy to understand the psychology of our pseudosexologists, as Talmey calls them. The essential sensuality of the pseudosexologist is apparent in his activities and in his satyr-like personality.

To anyone with a sense of humor it is amusing to read the drool of certain sex-obsessed writers who always profess to be concerned about the happiness of other people, while actually doing much social and moral injury to sexual dupes. The bestiality of such individuals is sometimes so obvious in their personalities that one wonders why they are tolerated. Since their uncouthness makes deception impossible, it must be that those to whom they address themselves, while understanding intuitively the true character of these monsters, cannot altogether suppress a curious interest in their performances, much as they might be fascinated by the antics of some slimy slug actual contact with which would be quite sickening.

The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

SCIENTIFIC ATTITUDE FOR CLINICAL RESEARCH.*

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Boston, Mass.

The scientific attitude for clinical research is not necessarily the traditional attitude of research institutions and research workers. The scientific attitude, like all science, is historical, that is, the scientific attitude for clinical research must take the position of investigation and reinvestigation which trace the clinical processes in the clinical body historically from beginning to end, without reserve and without bias.

All that we can scientifically assume for clinical research is the clinical body. All clinical research must be worked out within the limits of this body.

The clinical body in human medicine is, of course, the human body as it appears in health and disease. To investigate the bodies of different species of animals and infer from such investigations that the results obtained apply to the human species with equal cogency, is a fundamental mistake. Animal investigations cannot take the place of investigations requiring human subjects; and if animal investigations are made with that object in view they require corroboration in human subjects to make the methods as well as the results of such investigations scientifically acceptable.

Clinical research covers the entire field of clinical medicine, and, therefore, is as applicable to particular parts of the clinical body as to the whole clinical body. The object of every clinical investigation is to ascertain conclusively the relation existing between parts and parts and between parts and wholes of the clinic. To understand clinical research to be confined to the mere process of investigation is to mistake the scientific object of clinical research.

What distinguishes science and, therefore, scientific knowledge from the ordinary knowledge of the street is the knowledge of relations, relations of position or form in perceptual space, of sequence or succession in perceptual time, of action or change in perceptual causation and conceptual motion.

We must, first, collect our clinical data; secondly, recognize the facts in the data; thirdly, compare clinical facts with clinical facts for their kindred, relevant, crucial relations; fourthly, classify facts and relations of facts; finally, subsume whole ranges of facts and relations of facts into larger relations or scientific laws. We must proceed from accurate collection of data and facts to their accurate comparison and classification into relevant relations for legitimate appreciation and scientific subsumption.

Thus we are, first, to investigate; then, to infer; finally, to summarize our inferences so that they fulfill the scientific object and facilitate the understanding and logical grasp of clinical medicine. By clinical medicine is meant all that belongs to medicine: medicine proper, surgery, hygiene; and by the object of clinical medicine nothing less can be meant than the removal of disorders and diseases.

Some investigators confine themselves entirely to observations. They will not infer. Others infer before they have the necessary data for logical inferences. The truth is that complete data are requisite for complete and legitimate inferences, and that legitimate inferences must be drawn from data if data are to be put to their proper use.

The scientific attitude for clinical research, then, has for its aim the realization of the scientific relations of medicine. To confine clinical research to pure observation is, therefore, an unscientific attitude. To herald a scientific relation in every observation made is equally an unscientific attitude. The relation, the perceptual phenomenal routine, the order in position, sequence and action, is to be described, expressed in conceptual terms. The research worker must, therefore, be not merely a good observer but, what is even more necessary, a cogent thinker.

Why? Because active observation is an act of the intellect reacting to sensation. Perception is an intellectual process. The observer that sees merely with the eye has not even the sight of the ox, for even the ox perceives what it perceives with its perceptive intellect and not with its sensitive eye.

Perception or perceptive observation is to give our data and facts. We observe phenomena and perceive them as individual objects limited in space, passing in time, following one another,

in comparison with individual objects that we have previously perceived as likewise limited in space, passing in time, following one another and then stored in our memory. It is for us, as investigators, to prove in every instance of observation whether we have correctly observed our data and accurately perceived the facts contained in the data. Have we taken all possible precautions for the accuracy of our observations? Have we overlooked anything? Have we misplaced anything? Have we ignored anything?

It is generally admitted that purposely to overlook, to misplace, to ignore is not the scientific attitude; but it must also be admitted that scientific clinical research demands precautions for the accuracy of our clinical and laboratory observations commensurate with the difficulties inherent in clinical observations. Not many can avoid putting into their observations something foreign to the observations; there are not many clinical data which are so clear and free from adventitious conditions making for obscurity that the facts may be read by whosoever may observe the data containing the facts; nor is it possible permanently to fix clinical data for future observation and correction.

The facts for which scientific clinical research is instituted are not naked observations any more than the relations or principles are pure conceptions. Facts are commingled in perceived data. Relations are conceived in the perceptual routine or order of facts. Who can convincingly draw the wheat from the chaff, in every instance, by simple observation?

In order that observation may constitute the scientific basis for clinical research, observation must be made in such a way that no question can be raised as to the manner or method of the observation, as to the actuality of the phenomena subjected to observation and the inheritance of the facts in the clinical phenomena. This scientific basis is assured only by the employment of the conjoined clinical method of observation and experimentation adopted and recommended by the American Association of Clinical Research. So long as we fail to utilize this conjoined clinical method of observation and experimentation, requiring two or more men to make and record their observations simultaneously and independently on the same patients, so long shall we be wanting in the possession of natural clinical observations which alone can constitute the scientific data for conclusive clinical research.

The scientific attitude for clinical research is the attitude of the observer rather than that of the experimenter. It is a calamitous mistake from which more than from any other cause the progress of clinical research has suffered its undue and unfortunate delay, that problematic experimentation is conceived to be the scientific method of clinical research. Experimentation rests upon its problem, an assumption, a hypothesis, which the experiment is to prove or to disprove through application of the conditions implied in the assumption or hypothesis. It is not unusual for experimenters to take a hypothesis and use conditions foreign to that hypothesis, shift the ground of their hypothesis and conditions several times in an experiment and then offer their results in seriousness as scientific products. For clinical research, all that we can scientifically assume as our problem in observation is the clinical body as a whole or any of its parts. For clinical research, any hypothesis as to what we are to observe in the clinical body is not in place. We are to observe what there is to observe, without any consideration as to problematic consequences and inferences. We are to examine our clinical body or any of its parts for the natural facts that the body or its parts may carry and not for artifacts that we may factitiously produce, for we are to infer natural relations of existing natural facts and not experimental relations of artificial facts.

The scientific attitude for clinical research is, then, to avoid problematic experiments, and, when problematic experiments are offered, to examine them, first, as to their experimental hypothesis; secondly, as to their experimental conditions or applications of facts; thirdly, as to their resulting facts or solution of the problem.

The apparent ease with which hypotheses or problems are made for experimentation is responsible for the many hypotheses experimented upon that go far from the essential objects of scientific clinical research. The experimental problem is unscientific for clinical research if it is a problem foreign to the objects of medicine or expresses one hypothesis and really stands for another, though unexpressed, hypothesis. Once a problem is chosen, it must serve as the hypothesis for the experiment throughout the experiment. To change the hypothesis during

*Read in New York on Sept. 28, 1916, before the Eighth Annual meeting of American Association of Clinical Research.

an experiment is to shift the ground of the experiment, to enter upon material and logical fallacies, and the result must be worse than nothing.

In fact, it is not easy to make a good experimental hypothesis, for the reason that scientific hypotheses are not ready made. They are the ultimates resulting from scientific observations of facts and cogent inferences and can be actually had only after conclusive inductive investigations.

Unscientific as a false hypothesis is, the use of irrelevant conditions for experimentation is equally unscientific. A scientific experimenter will be guided throughout his experiments by his hypothesis. He will experiment only with such facts as are prescribed in the conditions implied in his experimental hypothesis. To attempt to experiment upon a hypothesis and proceed with conditions not given by his hypothesis is to work upon a hypothesis not in view, and the result is that of an unstated hypothesis, foreign, and therefore false, for his proposed experiment.

A great many observations are given the name of experiment when only the field of observations is diminished. To diminish the field of the observation does not make the observation an experiment. To observe a tumor of the breast in the clinic and then to observe a piece of the tumor in the laboratory does not alter the fact that both the clinical and the laboratory observations are observations. To call the clinical observation an observation and the laboratory observation an experiment is absurd.

The distinct difference between observations and experiments lies in the fact that observations are to produce facts without any hypothesis and that experiments are to use facts implied in a hypothesis. Without a hypothesis, there is no scientific experiment. With a hypothesis, there is no scientific observation.

This distinction is of the utmost importance if we are to take the scientific attitude for clinical research. For scientific observation, we may particularize our field of observation, and move it from clinic to laboratory and from laboratory to clinic, and still note form, number, color, size, position, sound, odor, resistance, heat, sensibility, expression, movement of the body or of the parts observed; we may observe anomalies of parts and bodies before treatment and the changes in them subsequent to treatment; we may make macroscopic and microscopic, physical and chemical, biophysical and biochemical examinations or tests and we are still observing and not experimenting; we may measure distance, produce inertia, gauge acceleration, weigh mass, estimate the force in action and reaction, ascertain density, alter the aspect of form, and we are nevertheless scientifically merely observing and not experimenting.

To particularize the field of observation, does not mean that we shift a hypothesis. We have no hypothesis for scientific observation. Even when we attempt to ascertain the causal relations between objects and objects, we are still merely observing until we come to prove our observations of antecedents and consequents, of cause and effects, and even then we must resort to conjoined observation rather than to experimentation to establish our proof, for the causes in medicine are perceptual antecedents and not explanatory third factors.

Scientifically, we must conceive presenting phenomena as present effects of antecedent causes; and as phenomena are conditioned by our perceptive faculty and we cannot foresee the time when our perceptive faculty will be other than it is, we may conceive phenomena as present causes of probable future effects. Medical investigators fail constantly because they attempt to reproduce present effects with causes and thus obtain the antecedent causes of the present effects, when it is palpably impossible to obtain all the antecedents of present effects and it is not in our power to produce effects at will when we do not possess the conditions that produce the effects. What we can do is to conceive the effects as wholes and then resolve them into their component parts or elements; divide wholes into parts, physically, in anatomy and anatomic therapeutics; decompose compounds into elements, chemically, in physiology and physiologic therapeutics; separate symptoms and signs, analytically, in pathology and pathologic therapeutics; obtain our pathologic and therapeutic phenomena in their naked, natural form and analyze them as effects.

Experiments instituted for such problems of cause and effect rather than to prove or disprove a hypothesis cannot solve the problems proposed; and it is no wonder that, in the course of time, the mere making of experiments seems to have become the ultimate object of research workers. The object of experiments, however, is not to train men as experimenters but to obtain logical results. Logical results of scientific experiments are solutions of the problems or hypotheses we put to test, not explanatory third factors either of the problems or hypotheses given or of problems or hypotheses not given. Experiments can give for result only what observation can give, viz., the

how, the order of phenomena, the sequence of our sense-impressions, not the why, the explanatory determining factor of that order. Only pseudo-scientists may find in the empirical order of facts, in the sequences of sense-impressions projected by our perceptive faculty into the experiment, the why, the explanation of that order; in the appearances, disappearances, reappearances of perceptual change the explanatory reason for that change.

The scientific attitude for clinical research is satisfied with the how. Medicine is a natural science of morphology and etiology. Scientific etiology deals with occasions as causes. Science does not deal with primary causes. It considers only secondary causes and these are occasions, not real causes. Neither the exciting causes of disease, developmental, traumatic, infective, nor the predisposing causes, inherited or acquired munity, are unconditioned real causes in the true sense of primary causes, but are merely relevant antecedents, conditions or circumstances antecedent to the appearance of disease, are occasions, not causes that would produce disease under all circumstances, are the apparent, conditional causes, the necessary antecedents of form and motion, the necessary or invariable antecedents as against accidental antecedents, the necessary conditions and relations of sequence that go with manifest effects.

The main question, then, is the observation of phenomena. The next question is the determination of antecedent phenomena.

No phenomenon or perceptual stage in a sequence has only one antecedent cause. From the antecedent phenomena we determine the causes of effects on the principle that the same set of causes is always followed by or accompanies the same effect; and once the causes are determined there is no need to make continuous experiments to reproduce a certain order of phenomena. What is needed for scientific clinical research is not the continuous reproduction of phenomena and their possible antecedent phenomena, but their observation in such a manner that the observations become permanently fixed for record and review, and the observed pathological facts may be grouped etiologically as developmental, traumatic or infective conditions, and morphologically as conditions of anatomic states and physiologic functions of the nervous, motor, tegumentary, alimentary, respiratory, circulatory, urinary and sexual organs.

A comparatively small number of relevant, crucial clinical facts will serve scientific classification to better purpose than the collection of a large mass of irrelevant facts. Once in possession of pathologic data and facts grouped as etiologic conditions and morphologic states of pathologic anatomy and physiology, we are in a position to determine the actual therapeutic relations of etiologic and morphologic medicine.

Compelled to conceive presenting phenomena as effects and to deal with them scientifically, be they pathologic or therapeutic phenomena, as effects of antecedent causes and not as causes of probable future effects, we can compare presenting phenomena with presenting phenomena accurately only as effects. We can compare and associate anatomic phenomena only with anatomic phenomena for anatomic therapeutic relations; physiologic phenomena only with physiologic phenomena for physiologic therapeutic relations; pathologic phenomena only with pathologic phenomena for pathologic therapeutic relations; and once we have determined such relations on the crucial relevant principles of the law of association, we may use these relations as experimental hypotheses and put them to the test of practical experiments to prove the truths of these relations. We make the therapeutic relations take the position of experimental hypotheses and experiment with the facts implied and conditioned in the relations as the experimental conditions of our hypotheses.

Conceptually, it is possible to apply the principle of identity for anatomic, physiologic, pathologic, and therefore, therapeutic comparison; but perceptually this is impossible. In nature, there are no exact multiples of identities; there are only similarities, contraries, dissimilarities.

Conceptually, we may divide infinitely, but perceptually there is a limit to division. As substances diminish in quantity, the spectroscopic shows that they change in quality.

Conceptually, we may have perfect spherical and cubical shapes in all sizes with constant boundaries of discontinuity, but perceptually shapes and sizes are only approximate, apparently continuous in the sequence of color, warmth, weight, hardness, and other changes.

We represent and measure these perceptual changes in the abstract, i. e., conceptually, in terms of conceptual motion; then we apply our conceptual mode of classification and description of perceptual changes with reference to the natural or particular types of motion. We thus investigate, correlate, weigh and measure forms morphologically and motions etiologically.

Thus we come to describe the wide ranges of medical phenomena in conceptual terms of scientific relations in the language of biologic etiology and morphology, describe conceptually the sequences of medical phenomena in terms of form and mo-

tion, and on this description of our past proved experience make it possible to predict with almost mathematical precision future applications and results.

For scientific clinical research, we must, then, not only know what it is perceptually essential to observe, but also how to describe what has been observed in conceptual terms, for we are called upon to observe and describe accurately changes that cannot be measured quantitatively and that, therefore, must be described qualitatively; changes of position in terms of mechanics; relative motion in terms of elasticity, plasticity, viscosity, cohesion, sound, crystallization, heat, light, electricity, magnetism; changes of organic and inorganic forms in human life, changeable as life is and unfixable in the common understanding of fixability as life has hitherto proved itself to be in most of its processes.

Meanwhile, the scientific attitude for clinical research calls for:

1. Collection of data and their perceptual observation as wholes and parts of wholes;
2. Verification of the data and their classification into facts on the principle of association as similar, contrary, and contiguous or concurrent facts;
3. Observation of similar facts with similar facts, contrary facts with contrary facts, concurrent facts with concurrent facts in position, sequence and action, and classification of their relations as antecedent, concomitant and consequent, invariable or variable, i. e., constant or accidental relations;
4. Subsumption of the constant relations of cause and effect into laws or descriptive summaries and their critical and experimental verification.

The scientific attitude for clinical research is unequivocally assured by the conjoined method of observation and experimentation adopted and recommended by the American Association of Clinical Research.

419 Boylston Street.

Ninth Annual Meeting.

The Ninth Annual Meeting of the American Association of Clinical Research will take place in Boston, on September 13, 14, 15, 1917. The full program will be published in the September number of the *MEDICAL TIMES*.

Render Unto Caesar—and to the Devil—Their Dues.

In the June issue of the *Interstate* an attempt was made to straighten out the legal tangle which had resulted from the campaign against the Salvarsan patent.

There is, however, another and perhaps more important aspect of this agitation. It is abundantly clear that behind the cover of the Salvarsan case certain cliques in our profession are stalking much larger game. While our ineradicable tendency to neglect general principles is being exploited in order to attack this particular right, an effort is being made in some quarters to create an agitation against all proprietary rights in therapeutic discoveries.

If surprised by a question on the subject, one would, I suppose, reply offhand that the existence of proprietary rights in therapeutic discoveries is undesirable, and that for a physician to acquire such would be unprofessional conduct. At first blush, therefore, our sympathies would be with the object of these propagandists, if not with the means they employ.

Such is the force of tradition, for we shall find that if we take into consideration modern conditions, the reasons which determine our prejudices on this matter will not bear analysis.

The rules and customs of the profession on this and analogous subjects were formulated at a time when all therapeutic discoveries were made by practicing physicians. This is no longer the case. The majority of discoveries of this kind are now made by laboratory workers, many of whom are not physicians and very few of whom are clinical practitioners. It should be clear that the rules of conduct which apply in such cases cannot reasonably be the same as those which would regulate the behavior of clinicians.

The fundamental principle which underlies the restrictive rules invoked in favor of the opposite view is that nothing should tempt the physician to consider anything before the interest of his patient. In the cases we are considering, this principle need not be called upon. The furthest to which this restrictive rule has been pushed is, I suppose, to be found in the canon of the Royal College of Physicians of London. Members and fellows of that college cannot recover their fees by process of law, they are debarred from entering into partnerships and from having anything whatever to do with the dispensing or the sale of drugs. Failure to comply with these stringent rules involves loss of membership.

It is probable that we should still be without a great number of our most valuable modern remedies had there not been some

substantial pecuniary reward to encourage research. Precisely what provision those who advocate the total suppression of all proprietary rights in therapeutic discoveries would suggest to meet this case does not appear. If they are running true to form, we shall do them no injustice by taking it for granted that the necessity for such a provision has not yet entered their minds.

So much for those who "go the whole hog." Others would apparently act on the principle that only such proprietary rights should be confiscated, not, be it noted, expropriated, which are, in their opinion, of exceptional importance in the saving of life. You will not fail to note the odd consequence that would ensue. The more valuable to humanity the results of a man's work, the less would be his certainty of reward.

Perhaps it strikes an outsider as curious that the physician who charges up to \$50 for a Salvarsan treatment, should wax so indignant at Ehrlich or Ehrlich's assignees taking a few cents on each dose. This reflection would be fortified in the special case under consideration, for I understand it to be a fact that Ehrlich's share of the royalties goes to the institute in which he worked and is applied to the promotion of further research.

It is singular that this movement for the abolition of patent rights in remedies has been supported chiefly by those whose most useful propagandist work has been against secret proprietary remedies. Surely, there is here a strange inconsistency. Are they not aware that the fundamental purpose of the patent law is to encourage discoverers to reveal their processes, by giving them, for a term of years after the publication, a monopoly in the exploiting of their inventions?

That insufficiency of patent protection leads to secrecy and thereby prejudices the public interest is notorious among those who have devoted some attention to the history of the subject. Nor has this tendency entirely disappeared even in our own time. By a singular coincidence which renders my argument the more forcible, the very house which owns the Salvarsan patent, the great firm at Hoechst-on-the-Main, exploits a large number of immensely valuable products in connection with dye industry and with color photography, whose composition and process of manufacture are maintained a strict secret.

And yet, of all great chemical manufacturers, there is none more ready to place, without hope of recompense, their vast experience and knowledge at the disposal of the purely scientific research worker and to afford him generous material assistance, than the house of Meister, Lucius & Bruning. I speak of what I have personally experienced.—(Editorial in the *Interstate Medical Journal*, St. Louis, Aug., 1917.)

War Medicine and Surgery

The Development of British Surgery at the Front.

Surgeon-General Sir Anthony Bowlby and Col. Cuthbert Wallace, consulting surgeons of the British Armies in France, have prepared a summary, which, in view of American medical officers' part in the war, is reviewed at some length.

The Field Ambulance.

At this, the "advanced dressing station," there is a personnel of two or three medical officers, non-commissioned officers, and orderlies. It is well supplied for any urgent operation.

The following instructions, will best indicate the limitations of their work:

"(1) Only operations of emergency should be performed in field ambulances, but the following exceptions must be noted:

"(a) Completely smashed limbs should be removed, and the patients retained for at least a day before being sent to a casualty clearing station.

"(b) Hemorrhage should be arrested by ligature of bleeding points whenever possible. If this is not possible, then plugging or direct pressure on the wound itself should be resorted to.

"(2) Abdominal wounds and all severe cases requiring early treatment at a casualty clearing station should be sent there by a special motor ambulance direct from the advanced dressing stations."

The Casualty Clearing Stations.

These hospitals are situated behind the line of trenches along the entire front, and certain local conditions are essential for the success of their work. They must be at or near to railway sidings, so that evacuation by train is easy; must be where good roads can connect them with the front; they must have a good water supply.

5. Patients suffering from shock or hemorrhage can be pulled through an operation with less collapse than by other methods.

6. It can be connected with an oxygen cylinder, and the ether vapor can be administered in combination with oxygen in cases of shock.

The Use of Antiseptics.

Very many antiseptic agents have been employed, and there is naturally some diversity of opinion as to which is the best. There is no doubt, however, that at the present time hypochlorous acid in the form known as "eusol," or the hypochlorite of soda in the solution known as "Dakin's fluid," are more extensively used than any others. The method of Dr. Carrel has been increasingly employed for the past year, and wounds treated in this way have done exceptionally well, although it is not always possible to employ the method universally at a time when the wounded are in very great numbers. At other times there is no difficulty, and in order to establish continuity of treatment Dr. Carrel's method is freely employed on every ambulance train taking wounded to the base hospitals.

Hydrogen Peroxide is not highly esteemed as a potent antiseptic, but it is of great service in loosening adherent dressings, and so preventing pain and injury to the soft tissues by forcible separation of gauze or wool.

At an early stage of the war attempts were made to sterilize recent wounds by pure carbolic acid. They entirely failed to achieve this object, but solutions of a strength of 1 in 20 or 1 in 40 are in common use, and many surgeons have had a very favorable experience in using equal parts of solutions of carbolic acid and hydrogen peroxide.

The hypertonic salt solution has not proved successful at the front, and at the present time is hardly used at all. The mixture of bismuth subnitrate, iodoform, and paraffin, recommended by Prof. Rutherford Morison for suppurating wounds (B. I. P.), has also been used for the past few months on recent wounds of the soft tissues, and also in cases of fracture. The results have been good, and encourage its further use.

Shock, and the Condition of Wounded Men.

The condition of wounded men necessarily differs as wounds are more or less severe, but in even slightly wounded men there may have been much bleeding, exposure to cold, want of sleep, or want of food. If to these are added severe pain and the exhaustion due to a hazardous journey over broken roads, it is easy to appreciate that very many patients arrive in a state bordering on collapse. Experience has shown, as a result of knowledge of these conditions, that it is not possible to estimate accurately the real condition of the patient until he has been rested and warmed, and has taken food; and especially in winter time the most important of the remedial measures is undoubtedly warmth.

Primary Amputations.

It is often necessary to postpone amputation for as long as a day, or even two days, if the removal of the limb is to be done at the thigh. Many men will survive if they are allowed sufficient time to get completely over the shock of the injury and its attendant conditions, who would certainly die if subjected to immediate operation.

When the condition of the limb and of the patient permit, a primary amputation should be performed by one of the recognized methods practised in the usual circumstances of civilian surgery, suitable flaps being provided. It is, however, never right to neglect drainage of the stump, and this should always be secured by the use of a large drainage tube, at any rate for a period sufficient to insure that no serious sepsis exists.

The seat of amputation has been much discussed, but in our experience the best general rule is that as much of the limb as possible should be saved, quite regardless of the typical "seat of election" as prescribed in former years; primary amputations through joints are, however, as a rule to be avoided.

If the patient is desperately ill from the combined effects of loss of blood and other complications his condition may be such that the additional shock of a high amputation may be quickly and inevitably fatal. In a pulseless patient who has a numbed and still oozing limb the best thing is to remove it as quickly as possible by cutting through the soft tissues at the site of fracture, subsequently clipping away torn and ragged tissues and tying the main vessels.

Not more than ten minutes need be spent on such an operation, and, if it is conducted under the influence of gas and oxygen anesthesia, many apparently hopeless cases can be saved, for there is very much less shock than would be entailed by either a longer operation or by the cutting through

healthy and sensitive skin and muscle higher up the limb. In such a case the making of a suitable stump must be left to a future time.

In another class of case the leg or the forearm may be smashed beyond recovery, while the thigh or the upper arm is the seat of other severe wounds complicated by the presence of mud, or portions of shell, or of clothing. It is quite unwise in such a case to amputate high up the limb, and it is best to perform a "flush amputation" close above the fracture, and again leave to the future the formation of a useful stump at a time when the damaged tissues have recovered. If this is not done, not only is the patient exposed to more severe shock by a high amputation, but his stump may slough and a yet higher up removal may be necessary if he ultimately does survive.

Wound Infections.

It is well known that in France wounds are liable to be very heavily infected by numerous pathogenic organisms, and inquiry from surgeons who have had experience in other theaters of warfare enables us to say that, especially in Egypt and in the Dardanelles, the gas gangrene and tetanus infections were notably much less common than in France.

While no time of year or condition of weather brings immunity, it is very evident that wet weather and mud are far more dangerous than summer weather and dust; and this danger is much increased when patients are wounded in very cold weather and are thoroughly chilled before they can be brought in. Most surgeons are also agreed that the coldness and lowering of vitality caused by severe hemorrhage have a similar predisposing effect on microbic infection, and it will be found that wounded men are attacked by tetanus and gas gangrene in proportion as the various conditions exist which are inimical to the human organism. It has also been noted that gas gangrene has often affected wounds in patients who have subsequently developed tetanus also.

Gas Gangrene.

This disease appeared very early in the war and was a very unpleasant surprise to the surgeons. It had not been described as a usual complication of gunshot wounds, and though seen occasionally in civil life, so that its etiology was known to a certain extent, it was sufficiently unfamiliar to render an accumulation of experience necessary for its proper treatment.

Two clinical types of the disease were recognized early and were named "gaseous cellulitis" and "massive gas gangrene." The former term was applied to the milder cases in which the cellular tissue round the wound was considered to be the primary seat of the disease; the latter term to those cases in which the whole limb was rapidly affected and died. The milder type of the disease was treated by incisions and drainage, the severer type by amputation.

From a clinical point of view it was found that the conditions that favored the onset of the disease were: (a) The retention of extravasated blood and wound secretions, (b) interference with the circulation, (c) the presence of large masses of partially devitalized or dead tissue, (d) extensive comminution of long bones, (e) the presence of particles of clothing in the depth of the wound. Each of these observations was quickly turned to account in the treatment of cases in which the disease might appear.

Retention of Blood and Secretions.

The avoidance of the retention of blood and secretions necessitated the employment of some sort of dressing that would not dry and cake during the transit of the patient to the casualty clearing station and from there to the base. Thus the dry gauze and wool dressing was abandoned for one that would keep moist and favor the discharge of blood and serum. It did not seem to matter what chemical was used so long as the dressing remained moist.

Interference with the Circulation.

Interference with the circulation was brought about in several ways. First there was the tourniquet. Every effort was made to dispense with this instrument, and where this was not possible the patient was taken with all celerity to the nearest place where the hemorrhage could be stopped. Circular bandages were found also to be a source of trouble, especially when the bandages took the form of a gauze dressing wrapped round and round the limb, which mode of application was very tempting in treating multiple wounds.

In simple flesh wounds it was easy to arrange that the bandages and dressings should be loosely applied, but in the case of fractured lower limbs it was necessary to obtain some fixation of the limb, for the movement of the bones was not only painful to the patient, but calculated to produce further damage to the soft parts. The adoption of the Thomas

splint largely solved this part of the problem, but there were and still are difficulties in the way of its adoption as far forward as is desired. Some fractured lower limbs are still sent to the casualty stations with the old Liston splint; the rapid evacuation of all wounded that now pertains has, however, lessened considerably the disadvantages of this splint.

The arrest of the blood supply to a segment of a limb by the rupture or thrombosis of an artery has so far baffled the surgeon. Attempts were made by suture and the employment of Tuffler's tube to restore the circulation, but, so far, have not met with the success that was hoped. All that can be done is to favor the collateral circulation in every way.

Bacteriology.

While surgeons were working out the best methods of treatment the bacteriologist were studying organisms found in the wounds, which were nearly all infected with many varieties of amoebic bacilli. Many bacteria were found, but the blame could not be definitely fixed on any one organism, and in many cases there was a mixed infection. The *Bacillus aerogenes capsulatus* of Welch was found present in the greater number of cases. The interesting and important observation was, however, made that the number of gas-producing organisms steadily decreased with the lapse of time, while the pus-producing organisms increased. This bacteriological fact corresponded with the clinical observation that the likelihood of gangrene occurring became steadily less as the wound became older and suppuration more obvious.

What tissue was primarily and chiefly affected? Kenneth Taylor, a member of an American ambulance near Paris, believes that the disease is essentially a disease of the muscles. Some clinical observers working in the British army have supported this view. It was found that gas gangrene seldom produced serious symptoms unless muscle was infected, and that the muscles might be killed and gaseous while the intermuscular planes remained little altered.

When gangrene occurs in a segment of a limb distal to the point at which the main vessel has been obstructed, all the muscles are affected, and the process appears to be similar to that which takes place in the body after death, though the actual route by which the organisms gain entrance is undecided.

When all wounds were infected by the gas producing organism, why should some pursue a normal course and others give rise to gangrene? McNee and Dunn have offered the following explanation:

The bacteria which are responsible for the causation of gas gangrene lead their normal existence as saprophytes in decaying organic material. When these organisms obtain access to tissues which have already been devitalized by loss of blood, they find an environment entirely suited to their growth, and proliferating readily, they produce gas and liquefaction of the tissues. This process is simply the uncontested invasion of dead material by bacteria, and it is entirely similar to what may occur in the whole body after death. The problem which has presented greater difficulties, and which possesses the graver interest, is the manner of involvement of living tissues by gas gangrene. The causal organisms are known to exhibit only slight general pathogenicity. If pure cultures of them are injected subcutaneously into animals the effects may be surprisingly slight and transient. The organisms are most frequently unable to establish themselves in the healthy undamaged tissue, and are soon destroyed by phagocytic action. The effect, however, is considerably greater if the bacilli are injected into muscle, and especially if some damage is caused at the site of injection. In this way the whole picture of a spreading gas gangrene has been produced in the leg of an animal by inoculation of a pure culture of the *Bacillus aerogenes capsulatus*.

The mere presence of the anaerobic bacilli in the muscle does not necessarily entail death of the fibres, for the organisms have often been recognized in sections, and have been successfully cultivated from portions of muscle which were remote from the gangrenous area and still contractile. How, then, does death of the fibres arise?

The rapid spread of gas gangrene into living voluntary muscle depends mainly on the peculiar anatomical conformation of that tissue. At the advancing edge of the gangrenous process only a limited number of muscular fibres are necrosed. The dead fibres, in contrast with the normal ones around them, are separated off from their vascular sheaths by spaces filled with fluid. As the stripping of these sheaths is coincident in extent with the histological appearance of coagulation in the fibres, it is suggested that coagulation is caused by a toxic fluid permeating and filling the sheaths. At this stage organisms are not more numerous than may be found in living muscle higher up. The toxic material is presumably derived from the action of organisms on the tissues lower

down. In a slightly more advanced stage the above alteration is found to extend to all their fibres and their sheaths, and bacilli are met with in greater numbers. Later still the whole of the tissue elements are invaded by the bacilli, and undergo extensive distortion and disintegration. In discussing the question why the disease sometimes recurs in an amputation stump when the operation has been done through apparently normal muscle, it seems necessary to distinguish between two types of amputation:

1. An amputation through the upper healthy part of muscles the lower portions of which are gangrenous.
2. An amputation through muscles which are normal throughout their length, as in removal of the thigh for gangrene of the leg.

McNee and Dunn have shown that the *B. aerogenes capsulatus* is found in healthy contractile muscle far beyond the gangrenous edge. As the only clinical test we have of healthy muscle is its normal color and its contractility, it may happen that an amputation through such muscle may still leave numbers of bacteria in the stump.

Treatment.

The treatment in vogue at the present moment, and based on the above observations, may be summarized as follows:

Preventive.

The wounds are opened up and all dead tissue and foreign bodies removed and adequate drainage provided. The circulation is encouraged in every possible way.

When the Disease Is Established.

(a) When gangrene appears in a segment of a limb where the main blood supply has been interrupted higher up the only treatment is amputation.

(b) When the gangrene appears in the muscles or muscle groups actually wounded. Here the treatment must depend on the condition of the patient. If this is good the wounds are freely opened and the affected muscles or muscle groups removed. The test employed to distinguish dead from healthy muscle is the want of contractility or the presence of the brick-red color.

Even with the gangrene localized to certain muscles amputation is the safest course if the general condition is bad, and it is seldom possible to save such a limb if the bone is broken.

Abdominal Wounds.

Although rest treatment was the rule, some attempts at operation had been made as early as November, 1914; but it was only when the more complete development of the casualty clearing stations provided satisfactory conditions that surgeons felt that their opportunity for operating had arrived, and during the winter of 1914-15 operations were done by several medical officers. But the early results were undeniably bad—so bad that most people abandoned the attempt, and the reasons for failure were no doubt both the late arrival of the patients at a place where an operation could be performed and the want of knowledge which later on was acquired by experience alone. In May, 1915, an inquiry into the causes of death after abdominal wounds established the following facts:

1. That the injuries were, as a rule, of such a nature that recovery must be a very rare event.
2. That hemorrhage was a chief cause of early death.
3. That bullets produced very extensive injuries.

Arrangements were accordingly made to insure that all patients suffering from abdominal wounds, and who were not too ill for transport, should be sent by special motor ambulances to the clearing station and not retained in the field ambulance. The result of a diffusion of more accurate knowledge was soon seen in the much earlier arrival of patients. The consequences of these improvements soon became apparent in the saving of many lives.

The British practice has been to operate a short distance behind the line, and the wisdom of this has been demonstrated. Here it is possible to operate under good conditions and to nurse the patient among cheerful surroundings for a week or more subsequently.

The casualty clearing stations have, as a rule, been used for this purpose. If for some local reason it has not been possible to put one sufficiently far forward at any one part of the line, a small operating center has been opened for the reception of abdominal and other urgent cases.

The practice is now to operate on all cases unless there is some reason to the contrary, and to operate on principle rather than on the indications by symptoms.

The cases on which operation has been found, as a general rule, to be inadvisable may be divided into two classes—(1)

those in which solid organs alone are wounded and in which there are no signs of continuing hemorrhage, and (2) cases arriving after thirty-six hours.

The liver furnishes by far the greater number of cases in Class 1. This organ is the only solid organ in which it is possible to say from inspection that no other organ is wounded. In the other solid organs, such as the kidney and spleen, the likelihood of hollow visceral injury nearly always compels exploration. Were it not for this contingency, the solid organs would require little operative attention.

In Class 2 the time for successful interference in the case of hollow viscera has as a rule gone by, and the bleeding, from whatever source it came, has ceased spontaneously.

Before operation a period of rest has found favor with most people. This period is used to combat shock, for which purpose heat in various forms has proved by far the most efficient means.

When the missile is retained the position of the projectile should be ascertained by an x-ray picture, as its localization will influence the site of the exploratory incision. The subcutaneous injection of saline has found favor in the past, but it is coming to be recognized that very little is absorbed in a shocked man, and that this method presents no advantages over its administration by the natural orifices. If these are not available the intravenous method should be used.

Celerity is of great importance. The body heat must be preserved in every way. There should be the least possible exposure of the viscera, and the intestines should be kept inside the abdomen as much as is compatible with the necessary manipulation. The least possible should be done. All the intestines should be examined. Suture of the intestine should always be preferred to resection unless the latter is inevitable, or saves time, and experience has shown that a single continuous suture, applied so as to invert the peritoneum, is quite sufficient and perfectly secure. Linen thread or thin silk are both preferable to catgut, and care is required not to draw the stitches too tight. If resection is unavoidable, end-to-end anastomosis is preferable to lateral apposition as a rule.

Solid organs should be disturbed as little as possible, unless vessel have been opened. Excision of spleen and kidney should be practised with great reserve.

Through-and-through wounds of the liver are best left alone, but if the x-rays show a large piece of shell or bomb in an accessible position it should be removed, for if left it generally causes dangerous sepsis in the organ.

Abdominal drainage is most probably of little use except in local lesions.

Artificial ani in the colon are to be avoided if possible.

Wounds of the stomach have proved decidedly more dangerous than was supposed. The fatal result has largely been caused by hemorrhage and shock and by complication with other visceral injury.

In the small intestine the multiplicity of the lesions and hemorrhage from the mesentery have been the chief causes of failure. As many as twenty lesions have been met with.

The large intestine wounds have been mostly fatal from sepsis of the retroperitoneal tissue in the case of the ascending and descending colons and from complicated injuries in the case of the transverse colon.

The rectum proper has not been wounded so often as would be expected, but has a high mortality.

The liver shows a large proportion of recovery after operation, but many patients would have got well without operation.

The spleen injuries have not been very dangerous except where the lesions have necessitated excision, and the same may be said of the kidney.

Intraperitoneal wounds of the bladder show a mortality of 56 per cent. where uncomplicated, but those associated with small gut injury have proved exceedingly dangerous.

Hemorrhage, sepsis, and shock have been the chief causes of death.

Results.

The following table gives the results obtained by the operative treatment in a certain sector of the British line over a period of eighteen months. Practically every case that got to hospital is included, so that a true picture is presented, and the varying results produced by locality and different conditions are eliminated as far as possible.

Abdominal Wounds Operated on in a Sector of the British Line During Eighteen Months.

Total number of cases.....	1,288
Arrived moribund.....	250
Total mortality, excluding moribund.....	50.06%
Total mortality, including moribund.....	60.02%
Considered with view to operation.....	1,038
No operation advised.....	73

Total operations.....	965
Total operative mortality.....	53.9%
Total hollow viscera mortality.....	64.7%
*Stomach mortality.....	52.7%
*Small gut mortality.....	65.8%
*Colon mortality.....	58.7%

The primary treatment of wounded joints may be summarized as follows:

1. Fixation on a suitable splint. In the case of the knee this splint should be one of the varieties of the "Thomas" as used for fractured thigh.

2. Beyond this treatment nothing more is required in simple perforating wounds.

3. The taking of an x-ray picture in cases where there is a possibility of the retention of a missile or of fracture of the bones.

4. The excision and cleansing of the damaged tissues and the exploration and lavage of the joint.

5. The closure, if possible, of the joint cavity.

Head Injuries.

The patients are brought from the trenches to the casualty clearing station as rapidly as possible. Here they are examined and dressed. If the pulse is slow they are sent on to the special hospital. If the pulse is rapid they are put to bed and evacuated later, should they improve. No special attention is paid to the type of wound—reliance is placed on the slow pulse as a sign that the patient will bear the journey.

The type of operation that has eventually been found most beneficial has been arrived at after many changes. It has been found that the removal of bone sufficient to expose half an inch square (1.27 cm.) of uninjured dura is best suited to most cases. Opinions still differ, perhaps, as to the comparative merits of making a flap or enlarging the scalp wound. On the whole, the flap is the best as a routine, unless the wound, as in the case of a horizontal one, is so situated as to compel the use of a very large one.

The recognition of the fact that a slow pulse is not necessarily a symptom of compression (for it may occur with a wide exposure of the brain), and that the symptoms, paralytic and otherwise, are not due to depression of fragments but to a destruction or commotion of the brain matter which is not remediable by operation, has also had an effect upon procedure. In the first place, a slow pulse is welcomed as a sign that recovery may follow, and it is no taken as a sign that operation is urgently needed, but rather that it is worth doing. The recognition that depression of fragments is not the usual cause of the symptoms has also done away with the notion that their removal must be immediately undertaken.

Immediate operation is in many head cases followed by a great drop in blood pressure, so that some delay may be actually beneficial on this account, and four hours after injury the brain is liable to be oedematous, and to extrude unduly if operated on while in this condition. A moderate delay has also been said to do good in that it allows adhesions to form between the dura and the pia mater, thus lessening the chance of a spread of infection over the brain surface.

At the same time that the best type of operation as regards the scalp and bony defect was being evolved many other points were in the process of settlement.

1. Excision of the wound was soon decided on.

2. There was at first considerable discussion as to how far the brain should be explored for bone fragments on the one hand and the projectile on the other. Every one was agreed that an x-ray picture had become a necessity, and the opinion was gradually formed that a limited and intelligent search for bony fragments and other foreign bodies was beneficial, but that attempts to reach a missile which was deeply embedded in the brain was not justifiable. Results seem to have proved the correctness of this line of treatment, for fragments of shell are reported to have caused little trouble provided their weight was not enough to cause pressure on the surrounding brain during movements of the patient.

3. The fact that many patients with head wounds suffered from septic complications, and the general demand for the drainage of all wounds, led at first to the employment of drainage in most cases of cranial surgery, not only of the scalp but of the brain also. The results of drainage of the brain were not satisfactory, and gradually it was abandoned, at any rate as a primary measure. The introduction of tubes was first omitted, and subsequently, systematic attempts were made to cover in the exposed brain, the scalp being brought together over the defect in the bone and dura, either by simple suture, pericranial flaps, or relieving incisions formed by undercutting the scalp. A drain introduced under the scalp is still generally employed. This covering up of the brain seems to

*Uncomplicated by wound or other hollow alimentary viscus.

have been a decided success, and, although septic complications are still too often met with, they are less frequent than in former times. There has consequently been a great decrease in the number of cases of hernia cerebri.

4. There is still some difference of opinion as to whether small cranial depressions and linear fractures with slight inequality of surface uncomplicated by symptoms, should be operated on in the first instance.

5. Most surgeons have accepted the recommendation of Sargent and Gordon Holmes that depressed fractures over the longitudinal sinuses should be left alone in the first instance.

6. Most operators are of the opinion that the dura mater should not be opened if found intact. The recognition that true compression of the brain is seldom seen has helped the formation of this opinion.

7. A general anesthetic may, with advantage, be replaced by the local use of novocain and adrenalin. If this method is adopted the patient is given either hyoscin and morphine or omnopon and scopolamin an hour before the operation.

Thus, by careful individual observation, and by the comparison of results, a method of treatment has been evolved which is applicable to all cranial wounds, and capable of modification in individual cases. It may be summarized as follows:

A primary cleansing of the wound. The transmission of the patient as soon as possible to the hospital where he will convalesce. The taking of x-ray pictures. The excision of the scalp and bone wound. A limited and careful removal of foreign bodies. The covering of the exposed brain. The closure of the wound, with superficial drainage, and a prolonged rest in bed.

Fractures.

The tendency throughout the war has been to abandon all constricting splints and to trust to extension for fixation of fragments. In the first place, a bandage round a limb, which might from swelling or movement cause constriction, was found to favor the onset of gas gangrene, and in the second, the various forms of Thomas's splint, in which the limb lies on a cradle, gained more and more reputation as a means of efficient splintage. Few other splints are now used on the lower extremity. It is curious that while plaster splints, both as emergency contrivances and as a means of permanent fixation, have steadily increased in use in the French army, in our own they have as steadily fallen into disuse.

The treatment of a compound fracture must be divided into two parts: (a) The cleansing of the wound; (b) the setting or reduction of the fracture, followed by its maintenance in good position. In the early stages the first is by far the most important, and on its attainment depends, within limits, the success of the second.

Total immediate reduction is good and to be aimed at, provided it can be carried out without prejudice to the cleansing of the wound, but an incomplete reduction, or even no reduction at all, may be advantageous by aiding the disinfection of the wound. Surgeons working at the front are, therefore, mainly concerned with the primary cleaning of the wound and with the means to transport a patient to the base with comfort and without detriment to the wounded limb.

The organisms that infect a compound fracture may be roughly divided into two classes: (a) Anaerobic or gas gangrene producing infection; (b) infection due to pus-producing organisms.

Anaerobic or gas gangrene producing infection affects chiefly the muscles, is sudden in onset and development, but tends to die out if not fatal in the early stages.

Infection by pus-producing organisms affects all the structures of a limb, is generally of slower development, and fatal at a considerably later period. The first (a) is the chief cause of death at the front, the second (b) of death at the base.

From the fact that it affects muscles, the first is more amenable to treatment by mechanical means—the excision of the affected part or part likely to be infected; but the second, giving little indication of its presence, cannot be so easily removed by such means.

At the beginning of the war fractures were treated very much as they were in South Africa. It is true that fragments of projectiles and clothing were removed, but more attention was paid to the solution of continuity of the bones than to the cleansing of the wound.

The occurrence of gas gangrene quickly called for a remedy, which was found in amputation or incisions into the limb. Then came the demand from the base for free drainage. At first small tubes were used; as these proved inefficient, large tubes were substituted. At the same time came a more systematic search for foreign bodies. This produced an improvement, and it was reported that the cases that came down with adequate drainage, especially those with dependent drainage,

stood a far better chance than those in whom such measures were not taken.

About this time attention was drawn to the fact that many flesh wounds, if freely excised, could be sutured with success. The application of this principle, though it could not be applied *in toto* to fractures, led to more extensive opening up and to better mechanical cleaning by the excision of all dead tissue and the more efficient removal of foreign bodies. These measures greatly reduced the occurrence of gas gangrene and produced an improvement in the suppurative infections. At the same time as these improvements were taking place in operative technique the adoption of the Thomas splint for the lower extremity in one of its many forms was steadily working its own good. The stretcher in the ambulance car and the cot in the train presented a difficulty—there was nothing on which to rest the splint. This difficulty was overcome by two methods. (1) A form of Thomas's splint provided with an attached foot piece or prop was used so that the splint was raised off the stretcher and the limb lay slung, as it should, in the splint. (2) Two forms of iron bracket, attached to the foot of the stretcher, allowed the Thomas splint to be suspended above the canvas of the stretcher.

Patients thus traveled easily in the motor ambulances, and the difficulty of the cot in the train was easily surmounted by sending the patient down on the stretcher. This latter expedient has been of great benefit to the wounded, as once placed on his stretcher at the casualty clearing station he can remain undisturbed until he reaches his bed at the base.

The fixation in a Thomas splint depends upon the extension. An efficient extension is, therefore, of prime importance. Sinclair's glue has provided the means. It is easily and quickly applied, and has the additional advantage that it produces no constriction of the limb. It has another advantage, it can be used when only a short portion of the leg is available, a very great gain when dealing with limbs covered with multiple wounds.

There are, of course, a few fractures of the femur that cannot be treated with Thomas's splint—namely, those in which a wound has been received on the part covered by the ring. For these the old Liston splint is used, or in some cases the abduction frame of Jones, though the bulk of the latter makes it unsuitable for work at the front.

Below the knee the Thomas splint can nearly always be used, except in those cases in which the fracture is near the ankle.

In the case of fractures of the upper extremity the Thomas splint has not proved so satisfactory, but only for the reason that the straight posture of the arm is unsuited to transport except under special circumstances, as in transit by barge. The form of Thomas splint for the bent arm has not proved a success. For transport the form of internal angular splint, with a hinged back piece for the upper arm, is probably the best.

The development of the operative side of the casualty clearing station and the provision of x-rays has been of inestimable benefit to the patient. There can be no doubt that the chance of the patient recovering with a good limb and of escaping a long period of suppuration depends on the attention that can be paid to his wound in the first instance. No amount of after-care can ever make up for the want of it at the first moment. A thorough and deliberate operation is all-important. There must be a free opening; the cavity must be explored by the eye, and not only by the finger, otherwise dead tissue and possibly foreign bodies will be passed over.

When first received, the wound is dirty, but the number of pus-producing bacteria is comparatively few. In a few days it is probable, no matter what treatment is adopted, that they will have greatly increased in number. If the first operation has been incomplete, a second may be necessary at the very time that the wound is in the worst possible state, and the procedure necessary to supplement the primary operation may be disastrous in exposing facial planes to infection from a wound teeming with bacteria.

The early, deliberate and efficient cleansing of the wound is the basis of success, no matter what chemicals are used after it is completed.—(*Brit. Med. Jour.*, June 2, 1917.)

Exophthalmic goitre occupies an important position as a disease liable to cause sudden death, owing to secondary disease of the heart muscle. The risk attending the administration of an anesthetic in this disease is well known, but death may occur suddenly with no apparent exciting cause.

The United States Army needs 25,000 doctors. This means one out of every six in civil practice. Will you be one?

The Physician's Library

Food Preparedness for the United States. By Charles O'Brien. 118 pages. Boston: Little, Brown & Co., 1917.

Mr. O'Brien, one of the cleverest of our young writers, has done the country a real service by calling attention to the necessity of conserving our food supplies. His articles in the New York *Globe* sounded a clarion call. Will we heed it or will we blindly permit our appetites to govern our judgment?

Gen. Leonard Wood, U. S. Army, than whom there are few better physicians, stamps this book as good in these well chosen words:

"In his work on food preparedness, Mr. O'Brien has laid down certain basic principles which should be heeded by our people. He has brought out in a very clear and forceful way the necessity of food preparedness—a preparedness which must be just as complete and far-reaching as the more purely military forms of preparedness which are so necessary for the conduct of modern war. Mr. O'Brien has set before us in a simple and straightforward manner not only the needs of the situation, but many of the things to be avoided. The almost wanton waste of food products and by-products, the reckless extravagance and the unnecessary variety in the use of foods all have been emphasized."

Physicians will do well to direct the attention of their patients to this book that they may profit by the lessons set forth therein.

Some Personal Recollections of Dr. Janeway. By James Bayard Clark. G. P. Putnam's Sons, 1917.

This is an intimate sketch which portrays and interprets sympathetically the author's dear friend, Edward G. Janeway, pathologist, sanitarian, physician and one reputed to have been the best diagnostician in the world of his time.

This sketch seems remarkable to us, for, in thirty-six pages, without the data usually thought essential to biographies and which generally serve only to obscure the subjects' personalities, the author, in a style as simple and fine as Goldsmith's, succeeds in making us understand what manner of man he was who brought into his walk of life "so much talent and truth, so much candor and courage, and withal, such simplicity and sincerity, and left it raised to a higher level for all time."

A. C. J.

Diagnosis from Ocular Symptoms. By Matthias L. Foster, M.D. 490 pages. New York: Rebman Company, 1917.

Eye pictures often portray pathological conditions in other parts of the body if the physician were sufficiently expert to interpret these findings. Unfortunately, he is usually lacking in the training which would enable him to recognize these pictures and the author has, with elaborate detail and great patience, classified the symptoms which are noted in the eye. He demonstrates the great variety of ocular ailments and how they affect the body.

The work is most painstaking and will prove a diagnostic aid of the first class.

Rest Suggestion in Nervous and Mental Diseases. By Francis X. Dercum, M.D., Professor in Jefferson Medical College. 395 pages, \$3.50. Philadelphia: P. Blackiston's Son & Co., 1917.

The book is presented under three headings—rest, therapeutics of mental diseases and suggestion—and each one is sufficiently elaborated. Neurasthenia is set forth as a fatigue neurosis and the author makes a marked distinction between neurasthenia and psychasthenia, as well as between those conditions and hysteria and hypochondria.

Physiologic and medical treatment of the different neuroses are carefully given and psychotherapy's value is properly brought out.

The author's prominence in his chosen field gives his written words authoritative weight.

Fractures and Dislocations. By Lewis A. Stimson, M.D., Professor of Surgery in Cornell University. 8th edition. 946 pages. \$6.00. New York and Philadelphia: Lea & Febiger, 1917.

This old friend appears in new form and considerably enlarged. Those who have served at the New York or Bellevue hospitals know how carefully Dr. Stimson pursued the study of fractures. For years it has been his hobby and lately he has had the unusual opportunity of studying fractures in France, a chance of which he was not hesitant to avail himself. Every known fracture and dislocation and its proper method of reduction is presented in these pages.

The book needs no review. Its position in the profession is such that one needs only to point to a new edition as one of the mile stones in surgical progress.

Traumatic Surgery. By John J. Moorhead, M.D., Adjunct Professor of Surgery in the New York Post-Graduate School and Hospital. 760 pages. \$6.50. Philadelphia and London: W. B. Saunders Company, 1917.

Among the few books that give one a broader view along the surgical horizon can be included Moorhead's splendid offering on traumatic surgery. He takes up a very extensive subject, properly classifies it, and presents an accurate picture of the conditions met with. The illuminating text is enhanced by excellent plates and the combined whole gives the reader a very comprehensive understanding of an almost limitless subject.

Personal Health. By William Brady, M.D., Elmira, N. Y. 407 pages. \$1.50. Philadelphia and London: W. B. Saunders Company, 1916.

Those who have read Brady's newspaper talks will be interested in his monograph. It is intended for the laity and is written in the same bright, snappy style that characterizes all of his breezy sayings.

Surgery, with Special Reference to Podiatry. By Maximilian Stern, M.D., and Edward Adams, M.D. 278 pages. New York: The School of Chiropody, 1917.

The authors, professors of surgery in the School of Chiropody, have prepared a text book for students and practitioners of chiropody which is very complete in every detail.

As a result of the work done by the school, under the inspiring leadership of Dr. Maurice J. Lewi, for nearly 25 years secretary of the New York State Board of Medical Examiners, chiropody, or podiatry, as it should more properly be called, has found itself and is now established on a firm, scientific foundation.

Naturally a much neglected branch of medicine needs special literature, and this excellent book fills the proverbial "long felt want." It is the forerunner of a System of Podiatry to be edited by Dr. Lewi. If we mistake not, such a system will direct so much attention to the diseases of the foot that physicians will eventually usurp the field of podiatry as a specialty.

Abnormal Myocardial Functions. By T. Stuart Hart, M.D., of Columbia University. 320 pages. New York: Rebman Company, 1917.

This book is a careful compilation of the intricacies of cardiac pathology, with particular reference to the clinical side.

By means of graphic records the author has sought to teach the student myocardial function in its every aspect. The practitioner of today must recognize that the studies on the heart have brought out a wealth of facts and a perusal of this book will enable him to interpret graphic records and to appreciate their clinical value.

International Clinics. Vol. IV, 26th Series. Edited by H. R. M. Landis, M.D. 307 pages. Philadelphia and London: J. B. Lippincott Company, 1916.

This volume is devoted to 22 articles on medicine, pediatrics, obstetrics, neurology, ophthalmology, urology, public health and surgery. It is up to the usual high standard.

English-Italian Phrase Book for Social Workers, Physicians' Supplement. By Edith Waller. Paper, 85 cents. Morristown, N. J.: The Daily Record, 1917.

Physicians and nurses whose work takes them into Italian families will find this little book of great help, as it sets forth practical, colloquial Italian in the subjects which would be used by medical men and nurses.

Blood and Urine Chemistry. By R. B. Gradwohl and A. J. Blaivas. 240 pages, \$2.50. St. Louis: C. V. Mosby Co., 1917.

This book gives the latest ideas in the chemistry of blood and urine. Many of the methods described are new and the work shows a good knowledge of the subject.

Mosby also publishes a little monograph by H. L. McNeil on Clinical and Laboratory Technic, which the physician will find useful for every day application.

Pulmonary Tuberculosis. By W. M. Crofton, M. D., of Dublin. 122 pages, \$1.50. Philadelphia: P. Blackiston's Son & Co., 1917.

In this monograph the author gives general principles and makes no pretension of going into the subject as deeply as the importance of the disease warrants.

Practical Urinalyses. By B. G. R. Williams, M. D. 142 pages, \$1.25. St. Louis: C. V. Mosby Co., 1917.

A book like this should be in every physician's library, as it presents in simple form the latest methods of military analyses.

(Continued on p. 26)

A Palatable
Bromide-Preparation

**SEDATIVE
ANTI-EPILEPTIC
MILD HYPNOTIC**

SEDOBROL "ROCHE"



Tablets, each containing 17 Grains
Sodium Bromide, with Sodium Chloride, Fat,
Vegetable Albumen Extractives etc.

ADDED TO HOT WATER
A MOST PALATABLE
BOUILLON IS PRODUCED

Procurable
from druggists.

TINS OF 10, 30, 60, 100
500 AND 1000 TABLETS

DOSAGE: IN EPILEPSY INCREASING SLOWLY FROM 1 TABLET TO
4 OR 5 TABLETS DAILY.

FOR OTHER INDICATIONS 1 OR 2 TABLETS ONCE OR TWICE A DAY.

Trial supply and literature on request from:

THE HOFFMANN-LA ROCHE CHEMICAL WORKS
440 Washington Street, NEW YORK.

In DIARRHEA OF INFANTS

Three recommendations are made —

Stop at once the giving of milk.

Thoroughly clean out the intestinal tract.

**Give nourishment composed of food elements capable
of being absorbed with minimum digestive effort.**

A diet that meets the condition is prepared as follows:

Mellin's Food - - - 4 level tablespoonfuls

Water (boiled, then cooled) - 16 ounces

(Composition—maltose, dextrans, proteins and alkaline salts)

(Calories per fluidounce=6.2)

Feed small amounts at frequent intervals

It is further suggested:— As soon as the stools lessen in number and improve in character, gradually build up the diet by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually given for the age of the infant; also that no milk fat be given until the baby has completely recovered.

MELLIN'S FOOD COMPANY,

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IODIN

that will give Iodin results without the usual Iodin disturbances

ORGANIDIN—WAMPOLE

Dr. a prominent western physician, reports as follows:

"Patient—woman, 55 years old—hemorrhage of the brain with consequent paralysis of the left side and blood pressure of 267. After active eliminative treatment, she was placed on 10-drop doses of Organidin four times a day. In less than a week the headache had ceased and at the end of four weeks she was getting about and able to return to her home in the country. I have treated several similar cases and quite a number with high blood-pressure and Organidin is the only thing that has never failed me."

Trade-size package mailed to any address postpaid on receipt of \$1.00
(1-oz. package, an ordinary three-weeks' treatment)

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HENRY K. WAMPOLE & COMPANY

—INCORPORATED—

MANUFACTURING PHARMACISTS,

PHILADELPHIA, U. S. A.

(Continued from page 246.)

Cancer; Its Cause and Treatment. By L. Duncan Bulkley, A.M., M.D., senior physician to the New York Skin and Cancer Hospital. 250 pages, \$1.50. New York: Paul D. Hoeber, 1917.

This book presents the medical aspects of cancer and its control by dietetic and medical treatment, with illustrative cases. While under medical guidance the death rate of tuberculosis has decreased over 25 per cent, since 1900, the death rate of cancer has increased over 25 per cent. during the same period, under surgical care. Bulkley wants nature to be given a chance, with the aid of rational living, and before rushing into operation it would be well to consider the views of a man whose experience is long and varied.

The Internal Secretions, Their Physiology and Applications to Pathology. By Dr. E. Gley, Professor of Physiology in the College of France, etc. Translated from the French and edited by Dr. M. Fishberg. 240 pages, \$2.00 net. New York: Paul B. Hoeber, 1917.

Every internal secretion has a useful, if not vitally necessary role, in the human economy, and the author entertainingly describes the functions of the secretions and gives them distinctive characteristics. The physiology and pathology of the endocrine glands are clearly set forth. The monograph is a valued addition to the literature on the subject.

Progressive Medicine. Vol. XX, Nos. 1 and 2. Philadelphia: Lea & Febiger, 1917.

This number contains the following: Surgery of the Head and Neck, by Charles H. Frazier; Surgery of the Thorax, Excluding Diseases of the Breast, by George P. Müller; Infectious Diseases, Including Acute Rheumatism, Croupous Pneumonia and Influenza, by John Ruhräh; Diseases of Children, by Floyd M. Crandall, and Rhinology, Laryngology and Otology, by George M. Coates, A. B., M. D. The June issue reviews: Hernia, by William B. Coley; Surgery of the Abdomen, Exclusive of Hernia, by John C. A. Gerster; Gynecology, by John G. Clark; Diseases of the Blood, Diabetic and Metabolic Diseases, Diseases of the Thyroid Gland, Spleen, Nutrition, and the Lymphatic System, by Alfred Stengel, and Ophthalmology, by Edward Jackson.

Surgical Clinic of Chicago. April, 1917. Philadelphia. W. B. Saunders Co., 1917.

Sixteen well-known surgeons, including Ochsner, Ridlon, Eisendrath and Andrews, contribute to this excellent issue.

The Medical Clinics of Chicago. Volume II, Number VI (May, 1917). 252 pages. Philadelphia and London: W. B. Saunders Company, 1917.

Superstition plays no part in this last issue of the Chicago Clinic, as 13 clinics are fearlessly published. They will give way to the Medical Clinics of North America, which will publish material from all our medical centers.

Training for the Trenches. By Captain Leslie Vickers, Lecturer of Trench Warfare, Department of Military Service, Columbia University; late Lieutenant of the Seaforth Highlanders. 12mo. 127 pages, net \$1.00. New York: George H. Doran Company, 1917.

Have you a son, relative or friend who will eventually fight in the French trenches?

If so, have him, by all means, read this book. If he will profit by the sound advice, based on trench experience, contained therein, he will be far more comfortable than if he is compelled to learn for himself what Capt. Vickers sets forth so trenchantly.

Trench life, in its ever-changing variety, is described, and short cuts to comfort are given, so that a prospective trench fighter can eliminate many unpleasant and even dangerous possibilities.

Capt. Vickers is an entertaining writer and his descriptions are vivid. He has done a real service in preparing this material and we hope every interested person will be privileged to read the book.

Nitrogen Narcosis.

Comment has often been made in the medical press of the excellence of the literature prepared by Reed & Carnrick. The latest and one of the best booklets from this firm is called Nitrogen Narcosis, which shows how the retention in the human economy of nitrogenous bodies results in a narcosis, which often calls attention to the approach of a renal condition. The book is finely printed and illustrated and is really worthy of preservation.

A Powerful Nutritive Tonic

The great progress that has been made in scientific knowledge concerning bodily nutrition—and physiologic chemistry in general—has emphasized the great importance of certain enzymes and nutrients in maintaining nutritional processes at their highest efficiency.

Especially has attention been directed to diastasic ferments and carbohydrates, for it is increasingly evident that these play a very prominent part in a large proportion of nutritional derangements.

As facts have accumulated, and the notable efficacy of diastase and carefully selected carbohydrates in the management of many forms of malnutrition has been conclusively demonstrated, the use of malt extract has rapidly extended.

The need for malt extract of the highest quality and diastasic efficiency has very naturally led many physicians to turn to

TROMMER **DIASTASIC MALT EXTRACT**

Honestly made from the best barley malt, for nearly half a century this pioneer extract of malt has been widely and successfully employed by careful, discriminating physicians who have recognized its remarkable tonic and reconstructive properties. Exceptionally rich in natural diastase, maltose and other nutrient extractives, it has been used with conspicuous benefits in **malnutrition, diabetes, incipient tuberculosis as a substitute for cod liver oil, in infant feeding and in all forms of bodily decline where carbohydrate metabolism is defective or impaired.**

In starch indigestion Trommer Extract of Malt, through its influence on the digestive functions, can be relied upon to produce substantial and lasting results. To countless physicians, therefore, Trommer Extract of Malt is not only the ideal corrective of starch indigestion, but also the most dependable and satisfactory nutritive tonic and reconstructive at their command.

Useful and interesting literature on request

THE TROMMER CO.,

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Fremont, Ohio

With the approach of warm weather, disorders of digestion and resulting intestinal disturbances become prevalent, particularly among infants and children. The treatment, when antiseptics are indicated, is often successfully met by—

LISTERINE

Its well-defined antiseptic power, unobjectionable odor and taste, and the readiness with which it may be admixed with other drugs, has caused many prescriptions to be written and very good results obtained from—

LISTERINE

"The antiseptic selected for internal administration in these cases must not be astringent, strongly acid or such as will coagulate mucin, but, on the contrary, must be non-irritating, non-toxic and compatible with other medicinal agents likely to be prescribed in conjunction therewith." Such an antiseptic solution is—

LISTERINE

Listerine literature, including "Acute Intestinal Infections of Children," mailed on receipt of professional card.

Lambert Pharmacal Company

Twenty-first and Locust Streets

St. Louis, Mo., U. S. A.

For the Conservation of the Practices of Physicians on Service.

The Auxiliary Medical Defence Committee of Kings County, N. Y., which is the Borough of Brooklyn has formulated a scheme for providing attendance on patients of medical men taking commissions in the United States Army or Navy, for conserving their practices and for securing to them a proportionate share of the proceeds from such practices during absence on service.

It appears under five headings and is given below in full.

I. Definitions as to meaning of terms used.

The term "Kings County" for the purpose of this communication shall mean the area in Kings County and the parts of Counties adjacent in which the practitioners of Kings County practice.

The term "Committee" shall mean the Auxiliary Medical Defence Committee of Kings County in the State of New York.

The term "Practitioner on Service" shall mean a practitioner who has applied for or has already obtained a Commission in the United States Army or Navy or who is engaged on Medical War Service approved by the Committee.

The term "Home Practitioner" shall mean a practitioner who is engaged in civil practice within Kings County and who signifies his assent to the provisions of this scheme.

The term "Representatives" shall mean anyone, whether home practitioner or otherwise, who has been legally appointed by a practitioner on service and authorized to receive monies, sign documents and generally safeguard his interests.

II. Arrangements for Providing Attendance on Patients of Practitioners on Service.

Any practitioner shall, unless he can show reasonable grounds for refusing, attend patients of a practitioner on service.

III. Conservation of Practices.

1) The attendance provided by a home practitioner on the patient of a practitioner on service shall be limited to the period of absence of the latter on service.

2) The home practitioner shall refuse attendance on any patients of a practitioner on service, hitherto attended by him, for a period of twelve months from the date of the return of the latter to take charge of his practice.

3) It shall be considered an obligation on the part of a patient of a practitioner on service, when consulting a home practitioner, to state the name of his or her usual attendant, and it shall be the duty of the home practitioner to make certain that this is done.

IV. Collection and Apportionment of Fees.

1) Home practitioners shall keep an account of all work done on behalf of practitioners on service and shall present such accounts monthly to the representative of the practitioner on service.

2) The monies received on account of fees earned by home practitioners for general attendance, obstetrics and operations on patients of a practitioner on service shall be paid over in the proportion of one-third to the representative of the practitioner on service and two-thirds shall be retained by the home practitioner.

3) Should it become necessary by reason of the enlarged number of medical men called into the service that a central collecting agency be established the home practitioner agrees to furnish his monthly account to such agency.

4) The names of both the practitioner on service and the practitioner attending shall appear on all accounts rendered.

V. General.

1) From the date of its promulgation any practitioner on service shall be entitled to all the advantages of this scheme.

2) The scheme shall apply to salaried medical positions as well as to private service.

3) The provisions of the scheme relating to the conservation of practices shall apply in the case of this practice of any practitioner on service changing hands on account of death or disablement or from any other cause which may be considered by the Committee to be a consequence of his service. Attendance provided for by the scheme shall continue until the practice be transferred or until such time as the Committee may determine.

4) Before his departure a practitioner on service shall appoint and notify in writing to the Committee the name and address of a representative legally authorized to deal with all matters connected with his practice and to assist the Committee in conserving such practice.

5) No home practitioner shall undertake the duties of a part time appointment held by a practitioner on service, except in a temporary capacity and subject to the same apportionment of salary or fees as obtains in the case of general practice.

6) If any dispute or difficulty shall arise in connection with any matter with which this scheme is concerned the same shall be referred to the Committee and its decision shall be final.

7) Assent to the provisions of the scheme shall be signified by signature on the accompanying form.

(Signed)

RUSSELL S. FLOWER, M. D., *Chairman.*

JAMES W. FLEMING, M. D., *Vice-Chairman.*

WARREN L. DUFFIELD, M. D., *Secretary.*

Training Volunteer Nurses' Aides.

The special committee appointed by the Chairman of the Mayor's Committee on the Training of Volunteer Nurses' Aides in New York, recommend that the plan of training for volunteer nurses' aides now given in base hospitals under the auspices of the Red Cross Nursing Service, be accepted and extended to such other hospitals as may be approved by the Red Cross for the purpose, and that such courses wherever given should conform substantially to this plan and be carried on under the same auspices.

In view of the fact that hospitals lacking proper educational facilities and unable to offer a proper field for such training, are attempting to establish short courses of training, it is of considerable importance that such efforts should as far as possible be placed under the control of the Red Cross, which forms our nation's nursing service. In no other way can volunteer nurses' aides be given the official recognition which will make them available for service wherever they may be most needed.

The plan of training for volunteer nurses' aide in connection with base hospital units calls for a short course of theory covering 15 periods of 2 hours each (30 hours in all for theory followed by a course of training in practical work in hospital wards, covering 24 periods of 3 hours each, 72 hours in all for practice).

It is recommended that the courses of theory and practice be carried on in the manner described above, or concurrently, where that method proves more convenient to the hospital giving the course and that the period of practical work be increased from 72 hours to a maximum of 120 hours. This increase seems advisable, not in order that the range of work for which nurses' aides should be prepared may be enlarged, but rather that more time may be given them to acquire some reasonable degree of skill and reliability in the performance of the tasks to which they may be assigned.

The adjustment of the time in which these courses may be completed should be left to the hospital selected. It may be arranged to cover a term of two months, calling for five three-hour periods weekly, preferably in the morning when the best opportunities are available for such training. This would mean 15 hours of practical work weekly, and the full 120 hours would require a period of two months for completion. This the committee considers the best plan. Where desired, however, it may be completed in one month, this plan calling for six hours of work daily for five days in the week. These plans outline the scheme of practical work only, and are in addition to the 15 periods of theory.

The general requirements laid down by the Red Cross for the training of Volunteer Nurses' Aides are:

(a) That candidates for admission to the course should not be under 23 years nor over 50. (It is recommended that they bring in addition satisfactory evidence of a good English education and of good moral character).

(b) That a paid instructor be appointed for this special work who shall preferably be an enrolled Red Cross nurse, selected by the Superintendent of nurses, and her appointment approved by the Red Cross Nursing Service.

(c) That the number of persons admitted to classes in theory should not exceed 20, and that for practical work not more than 10 should be admitted to any hospital at any one time for training.

(d) That the usual uniform for volunteer aides be worn during the training, but that the insignia of the Red Cross be allowed only when upon satisfactory completion of the course the aide is detailed to regular duty.

(e) That students entering for training as volunteer nurses' aides should be enrolled by the Red Cross Nursing Service and that examinations be conducted and certificates awarded through that service.

(f) That a suitable fee be charged for the course of instruction, of which 50 cents per capita be sent to the Bureau of Nursing Service at Washington.

England has conscripted every physician under 41. Let us volunteer and not be forced to do our duty.

The United States will not call upon its physicians in vain.

Johnson & Johnson Announce a Perfect Process of Preparing the Carrel-Dakin Solution.

Through the perfection of the process of preparing the Carrel-Dakin Solution for the antiseptic irrigation of deep wounds, the Carrel method of wound sterilization is placed at the disposal of every surgeon.

The success of the Carrel method in France and this country has deeply interested the medical profession, but until now the Carrel-Dakin Solution could only be supplied to hospitals.

The methods heretofore used for preparing the Carrel-Dakin Solution have been based upon the use of bleaching powder, and therefore suffered from the inherent drawbacks that bleaching powder is heir to, particularly that of stability.

This necessitated an analytical test each and every time a new batch of the solution was prepared. In addition there has been troublesome settling, decantation and filtration to eliminate the lime sludge.

All this has hindered the general adoption of the Carrel method.

We have acquired from the Electro Bleaching Gas Company their method of encasing liquid chlorin in glass ampoules, and are therefore able to announce a perfect process of preparing the solution.

We supply the elements which make up the solution as follows:

Liquid chlorin in glass ampoules, each ampoule containing a definite weighed quantity of chlorin of the exact amount required to produce one liter of solution of a standard strength, between .45% and .50% of sodium hypochlorite, and an accompanying tube of sodium salts exactly proportionate to the amount of liquid chlorin.

All that is necessary to do is to dissolve the contents of these tubes in water and there is produced a perfectly clear hypochlorite solution ready for immediate use. No filtration is necessary; no analysis is necessary; there is no troublesome lime sludge to be disposed of.

The preparation is offered with the assurance that the surgeon may absolutely rely upon its being the same each and every time. The liquid chlorin is not affected by light, by ordinary temperature conditions, and is absolutely stable, usable under any and all conditions of climate, etc.

We believe this to be the greatest and final step necessary to place the Carrel-Dakin method of wound sterilization in the hands of hospitals and the medical profession.

Chlorin Ampoules, Johnson & Johnson, may be obtained through physicians' supply houses and the drug trade.

Circular descriptive of the methods of use accompanies the ampoules.

A copy will be sent to any physician upon request.

Johnson & Johnson

New Brunswick, N. J. U.S.A.

New York Medical Journal Ambulance.

At the meeting of the Montclair, N. J., Chapter of the American Red Cross, June 19, \$317,000 was raised for the American Red Cross. This was probably the largest amount of money subscribed for the Red Cross by any city in the United States of less than 25,000 inhabitants, and averaged about \$13 per capita for every man, woman and child in the town.

At this meeting the *New York Medical Journal* presented to the Montclair Chapter a completely equipped ambulance of a type which is almost exclusively used on the battle front in France. The publishers of the *Journal* for the past twenty years have been brought so closely in contact with the medical profession that they feel they are able to appreciate the lofty ideals and its unselfish devotion to duty.

The publishers of the *Journal* expressed their happiness to have this opportunity to give tangible evidence of their desire to aid in the emergency which confronts this nation and its allies. May this ambulance go forward on its mission for humanity to the tune of the Battle Hymn of the Republic and to the chorus of the song the boys sang who have just landed on the shores of France. We read that as they marched off the transports the bands were playing the new marching song of the army. The chorus goes:

Good-bye, dear old Yankee land, Hello, France!
We've sailed across the ocean to make the Germans dance.
They have tried to rule the world with military stuff,
But we come from a country that never takes a bluff.

Eupinol More Effective Than Phenol.

Eupinol is a distillate, scientifically produced at a special temperature and with great care, from the resinous wood of *Pinus Palustris*. It is, chemically speaking, largely *Laevo Menthone*, possessing all advantages of *terebinthinae* products, yet with superiority most marked by reason of its high bactericidal power, combined with a greatly stimulating and anodyne action. Its value in minor surgery, traumatism and contusions is of the highest order.

The advantages that Eupinol possesses over Phenols and like antiseptics is its permeating property—a moist dressing—its local anesthetic power and healing properties. It is non-toxic, non-escharotic and non-corrosive. Its range of application to varying conditions is legion.

For immediate results, by reason of its high oxidizing power, it is effective in relief of pain and anti-toxic power in treating insect stings and reptile bites (saturate bandage or cotton and apply to bite or sting). Physicians who have used Eupinol give unstinted praise to its efficacy as an antiseptic, soothing and healing agent in conditions indicated. The directions for use are simple—apply to affected parts, allow to soak in, permeate thoroughly the extent of the injury, dress with a lint, saturated with Eupinol, then apply bandages. You need have no fear of Sepsis—Try it.

In addition to its bactericidal power, Eupinol possesses as a surgical and topical dressing, it may be used with equal advantage and efficiency as an internal agent in affections of the nose, throat, bronchia and intestinal tract. Sample sent on application to The Tilden Company, New Lebanon, N. Y., or St. Louis, Mo.

Treatment of Hay Fever.

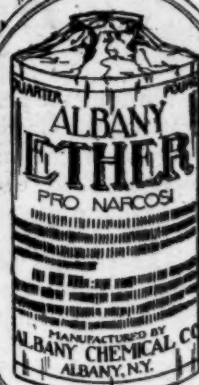
Notwithstanding the many "specifics" and "near-specifics" for hay fever that have been pushed forward in recent years, the disease, if not precisely enigmatical, continues to baffle and perplex. It is evident that no single therapeutic agent has arisen that can eliminate, or even modify, the symptoms in all cases. Individual sufferers present problems that are peculiar to themselves and other than the vasomotor relaxation of the upper respiratory tract, which is common to all, there are no uniform underlying pathologic changes.

Fortunately there are some very satisfactory alleviants. The suprarenal substance, in the form of its isolated active principle, Adrenalin, is undoubtedly one of the best of these. Experienced practitioners say that in a large majority of cases it successfully controls the symptoms. Adrenalin Chloride Solution and Adrenalin Inhalant are the preparations commonly used, being sprayed into the nares and pharynx. The former should first be diluted with four to five times its volume of physiologic salt solution. The latter may be administered full strength or diluted with three to four times its volume of olive oil.

Another agent of large promise in the treatment of autumnal hay fever is Ragweed Pollen Extract. Its use is based upon the generally accepted theory that this type of hay fever, with occasional exceptions, is due to the pollen of ragweed. An accurately standardized product is supplied by Parke, Davis & Co. It is administered hypodermically.



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For Efficient
SURGERY

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The Comfort of the Patient

By the elimination of vinyl alcohol and aldehyde, water and alcohol from anesthetic ether not only is the danger of accident, nausea and other disagreeable post-operation symptoms reduced, but the recovery of the patient from narcosis is greatly facilitated.

With these facts in view physicians and surgeons will be interested to know that Albany Ether Pro Narcosi has a specific gravity of about .710 at 25 degrees C. corresponding to .720 at 15 degrees C. showing absence of water and alcohol imperatively demanded by the Pharmacopeias of Great Britain Germany, France and Russia. Albany Ether Pro Narcosi is indifferent to all chemical tests for impurities, in addition to which the distillation point viz: 34 to 36 degrees C. proves the absence of all lower and higher boiling contaminations.

Physicians and surgeons are invited to compare Albany Ether Pro Narcosi with that offered by other makers—chemical and clinical tests will show its superiority.

Hospitals only furnished with samples
on application.

Albany Chemical Company
ALBANY, N. Y.



PROPERTIES consist of 30 buildings—accommodations for 1,200 patients—20 acres of beautiful shady lawns—model dairy—extensive farm and greenhouse systems—pure artesian water supply—large staff of specializing physicians, nurses, dietitians, physical directors and general assistants—wholesome, nutritious bill of fare—thoroughgoing diagnostic methods—complete, modern therapeutic equipment—splendid facilities for outdoor recreation.

THE BATTLE CREEK SANITARIUM

Box 335 Battle Creek, Michigan

HAY FEVER Successfully Treated with Bacterial Vaccines

POLLEN irritation and breathing of the hot dust laden atmosphere favors the development of pyogenic bacteria in the respiratory tract which then become a primary factor of the disease.

Experience shows that the immunizing influence of an appropriate bacterin will either cure the disease or so modify it that it causes but little distress. Use Sherman's Number 40.

Write for literature.

MANUFACTURER
OF
BACTERIAL VACCINES
G. H. SHERMAN, M.D.
Detroit, Mich.
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Babies Dying in Poor Homes.

Low wages of fathers and the gainful employment of mothers away from home accompany an excessive death rate among babies in Manchester, N. H., according to the report on infant mortality in that city, which has just been issued by the Children's Bureau of the U. S. Department of Labor.

The study was based primarily on interviews with the babies' mothers. It was absolutely democratic in scope and included all babies whose births were registered during a single year and whose families could be found. Of all the babies studied, one in six—165 per 1,000—had died during the first year of life. There were wide variations in rate between different groups of the population, according to the father's earnings, the employment of the mother, the congestion of the home, and the way in which the baby had been fed.

Nearly half of the 1,643 babies had fathers whose earnings were less than \$650 a year, and more than one-eighth of the babies had fathers earning less than \$450 a year. Only one in sixteen (6.4 per cent.) had fathers earning as much as \$1,250. The death rate among the babies in the poorest families was more than four times as high as among those in the highest wage group.

Low earnings on the part of the father appear to be the most potent reason for the mother's going to work. Where the fathers earned less than \$450 a year almost three-fourths of the mothers were gainfully employed during some part of the year after the baby's birth. As the fathers' earnings rise the proportion of working mothers falls until in the group where fathers earned \$1,050 or over, less than one-tenth of the mothers worked.

Keeping lodgers was the chief occupation of those who worked at home and working in the textile mills was the chief occupation of those who worked away from home. The mothers of 267 babies went out to work during the first year of the baby's life and these babies had a death rate considerably higher than those whose mothers worked at home, or were not gainfully employed. The rate is especially high—277.3 per 1,000—among the 119 babies whose mothers went out to work before they were four months old.

The babies were grouped also according to the kind of house in which the family lived. The death rate for babies whose homes were in one-family houses was 86.1 per 1,000; in houses containing seven or more families 236.6 per 1,000. Similarly the rate showed a steady increase according to the number of persons per room. It was 123.3 per 1,000 where the family had more rooms than persons; and 245.9 where there were two or more persons per room.

In each economic group the babies who were artificially fed had fewer chances of survival than the babies whose mothers nursed them. But the economic status of the family modifies the influence of feeding, and the difference in the death rates for breast-fed babies and artificially fed babies is least striking in the highest income group.

The Carrel-Dakin Solution.

One drawback to the general adoption of the Carrel method of wound sterilization in this country has been the inability of surgeons to secure the Carrel-Dakin solution. Because of its delicate nature it could not be sold through the ordinary commercial channels. Its stability could not be guaranteed. It has been supplied to hospitals, where special facilities for its prompt use and proper handling were recognized, and the results obtained have been very promising.

It is believed that the Carrel method opens a new field to surgery. By means of this technique many amputations can be avoided and much suffering prevented. Serious compound fractures, infected joints or abscesses, for instances, may be safely treated by this method with entire assurance that the surgeon can produce a sterile wound and can maintain it in that condition indefinitely, or until circumstances, in his opinion, warrant closure of the wound.

Johnson & Johnson have just announced that they have perfected a process of preparing the Carrel-Dakin solution which will enable them to place this solution in the hands of every surgeon. They have solved the problem of stability. The simplicity of preparation of the solution from the ampoules supplied by Johnson & Johnson will appeal to surgeons.

They make a full announcement of their new process in a page announcement in this issue.

Desiccation and Food Conservation.

In the June number of the *Chicago Chemical Bulletin* of the American Chemical Society there appeared an interesting article on food desiccation which in part is quoted below:

"The present disturbed conditions of the food markets, together with the widespread agitation for waste curtailment,

are reflected in the great efforts that are being exacted to effect radical measures. One project which is receiving considerable attention is the desiccation of our excess crops. Desiccated foods are by no means unknown in this country. The various dried milk products, and dried egg, have been used extensively. Dried apples and apple waste, peaches, prunes and other fruits may be classed as semi-desiccated, because of the considerable moisture remaining in the commercial articles. Fish products, dried oysters and clams have been on the markets for years. However, the extensive desiccation of vegetables is a new product that will probably be given a thorough trial this year.

The commercial advantages of such desiccated products are their keeping qualities, their compactness, the saving in cost of transportation, the wide range of containers that may be used. This last item looms large, in view of the extreme shortage of tin plate. The relatively small bulk commends itself as a means of relieving the transportation problems. Viewed solely in the light of the moisture content of vegetables, it would be interesting to calculate the quantity of water that is transported about the country in the form of canned vegetables. Here the economic consideration would decide whether it was cheaper to evaporate the water than to can and transport it.

The public will have an opportunity of trying out a number of desiccated products if the plans of several corporations mature successfully. During the coming winter, the housewife may have the novel experience of preparing mashed potatoes by adding hot water to dried potato to the proper consistency; of making vegetable soup by adding hot water to dried soup stock and dried vegetables. To the enthusiast, the possibilities along this line are infinite and varied.

Physicians Condemn Alcohol as a Stimulant.

How greatly medical opinion regarding the place of alcohol in the therapeutic armamentarium has changed in recent years may be seen from the following resolution adopted by the House of Delegates at the recent annual meeting of the American Medical Association:

Whereas, We believe that the use of alcohol is detrimental to the human economy, and whereas, its use in therapeutics as a tonic or stimulant or for food has no scientific value; therefore,

Be it Resolved, That the American Medical Association is opposed to the use of alcohol as a beverage; and,

Be it further Resolved, That the use of alcohol as a therapeutic agent should be further discouraged.

It is true that the resolution was not adopted without opposition. Most of this, however, took the form of objections to the consideration of the question by the House of Delegates, "which," it was declared, "was no place to settle questions of science." A large majority of the delegates were out and out against the use of alcohol as a beverage, but they differed as to whether there were not some cases in which a physician could use it to advantage. After considerable discussion, the resolutions printed above were adopted by a substantial majority.

Pulvoids Natrium Comp.

We again direct attention to the advertisement of the Drug Products Co., Inc., of New York, in relation to Pulvoids Natrium Compound, (High Tension, Dr. M. C. Thrush).

The manufacturer says the sales are increasing rapidly and that the volume of orders from physicians demonstrate the following facts:

Pulvoids Natrium Compound meets all anticipations for the safe and quick reduction of high blood pressure.

It performs its functions without producing shock, by reason of the well balanced formula.

Special coating prevents kidney disturbances.

It is ideal for office dispensing as it keeps the patient under constant personal observation.

Readers not thoroughly familiar with this product may write the Drug Products Co., for samples and literature. They will find them important and interesting.

Conjugal Paresis.

H. H. Drysdale, Cleveland, reviews the symptoms and characteristics of paresis, and remarks that while heredity or juvenile paresis is not so rare, according to the literature conjugal paresis is a very uncommon condition. He briefly summarizes a few cases reported by foreign observers, and reports in detail the histories of a husband and wife both suffering from the same condition in which the transmission of the disorder from husband to wife was indisputable. The only child suffers from hereditary syphilis. He questions somewhat the rarity of conjugal paresis, and thinks that most persons with large experience in the care of paretics must have met with conditions of this sort.—(J. A. M. A.)

Getting the patient to take nourishment

Sometimes the process of "building up" a convalescent is complicated by lack of appetite on his or her part. Food is either left untasted or is forced on an unwilling stomach that reacts sluggishly.

That is a case where food must be both dainty and nutritious—also light and easy of digestion. Bread foods, rolls, light biscuit and simple cake made with

ROYAL Baking Powder

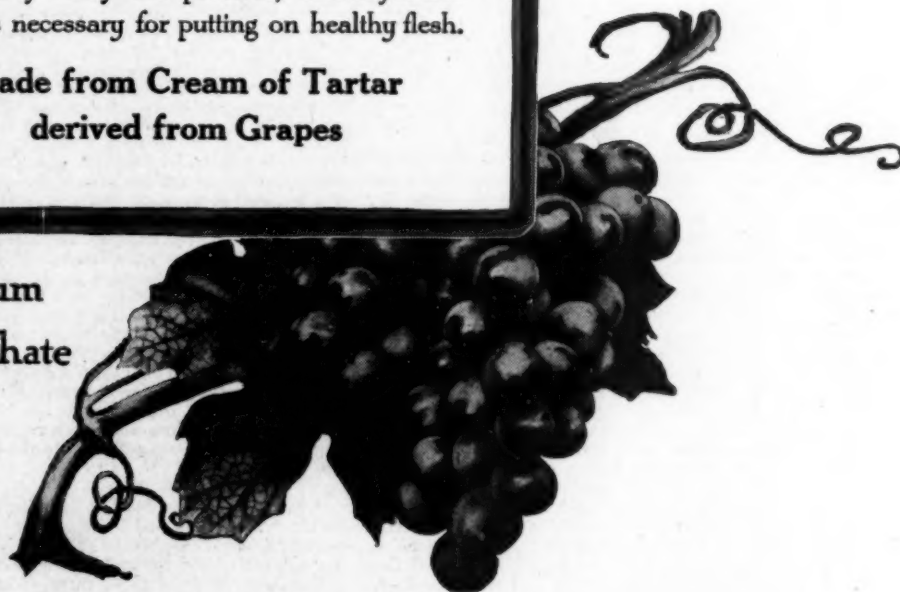
make the "mouth water"—the first sign of healthful gastric excitation. They are so light that even the normal appetite will not overload the stomach with them; and yet, with butter, they carry the proteids, carbohydrates and fats necessary for putting on healthy flesh.

**Made from Cream of Tartar
derived from Grapes**

No Alum
No Phosphate



*Absolutely
Pure*



ABSTERGENT
DEODORANT



PROPHYLACTIC
ASTRINGENT



AN EFFICIENT AND CONVENIENT PRESCRIPTION

For Abrasions of the Skin, Burns, Pruritus, Eczema, Dermatitis, and all other forms of skin irritation.

ENTOL used as a gargle and wash is no less highly beneficial in the treatment of Pharyngitis, Laryngitis, Tonsillitis, and Pyorrhea Alveolaris.

ENTOL PRODUCTS CO., Inc., 1009 Columbus Ave., New York

Hay Fever *To the Initiated*

Suggests **Escharol**

The results obtained warrant its use in every case of ROSE or HAY FEVER, and all Hyperplastic conditions of the Nasal Mucosa. It relieves Hypersensitiveness and makes unnecessary the removal of the patient from the influence of pollen and other emanations which act as exciting causes. A TRIAL WILL CONVINCE.

Samples to the Profession on Request

LATO PHARMACAL CO., 15-25 Whitehall St. New York



Iodin Tubes.

Packed in hypodermatic tablet vials, ten of Lilly's Iodin Tubes require very little space. One of these vials will fit nicely into a physician's tablet or syringe case; there is no danger of spilling or leaking and the tubes are always at hand when the site of a hypodermatic injection is to be sterilized. These tubes hold only a few drops of iodine—just enough for the purpose for which they are intended. Once a physician tries them they become a permanent adjunct to his hypodermatic outfit. To use, the physician simply breaks both ends of the sealed tube and applies it to the site of injection. Lilly's Iodin Tubes are supplied through the drug trade in packages containing five vials of ten tubes each—fifty tubes altogether. Where more iodine is required for painting purposes Lilly's Ampoules of Iodin will be found very serviceable.

Posture in Obstetrics.

J. W. Markoe, New York, says that his attention was called to the subject by a paper on the "Significance of Posture in Obstetrics," by the late Dr. A. F. A. King, and he began in 1909 the study of posture in the different stages of labor. It came to his mind that if he could provide a suitable chair he would be able to utilize the weight of the uterine content advantageously in dilating the cervix and parturient canal. He reviews the history of the obstetric chair as used in past years in various countries down to the beginning of the nineteenth century. At present it is out of vogue in most civilized countries, but it is still in use among the Orientals. The present text-books hardly mention it, but he points out its advantages over present methods. Its actual value in shortening the time of labor is not touched on in the text-books. In an earlier article he suggested that a folding chair might be improvised which could be constructed of such material that it could be easily sterilized and so made that it could be folded up and carried from case to case. He has not found this easy to do, and he has, therefore, turned to the rocking chair, found in every home, which will make an excellent obstetric chair. He believes that it should be used with discretion, but that applies to all medical procedures. Since he has begun the use of the chair he has had fewer obstetric operations, and statistics show an improvement, fewer deaths of the mother, fewer stillbirths and fewer deaths of children following labor. As far as

perineal lacerations go, it has not, apparently, affected them, but he believes that in such complications the fault lies with the accoucheur in not controlling the progress of the child in time to prevent such accident. Several tables are given bearing out his recommendations, and, he says, bring home the distinct advantage of the use of the obstetric chair, especially in those cases in which, due to some abnormality in the fetus or mother, operative interference seems to be indicated.—(J. A. M. A.)

Altitude and the Nervous System.

G. A. Moleen, Denver, discusses the effect of high altitude in producing nervous symptoms in predisposed individuals. He reviews the work of the Anglo-American Pike's Peak Expedition of 1911 and its findings, and adds his own comments from personal experience and practice in Colorado. As regards the question whether so-called neurasthenic cases occur more frequently, he says it must be answered in the negative for several reasons: First, the general standard of living is better than in the more congested centers of population; second, the confined artificially lighted indoor workers are less common; third, there is a greater average of bright, cloudless days, and lastly, the greater intensity or actinism of the light. His conclusions are: "1. The demand for oxygen-carrying elements of the blood increases directly with the altitude. 2. In normal individuals this requirement is met through an increase in the red blood corpuscles and hemoglobin in from three to five weeks—the normal acclimatization. 3. This power of adaptation is diminished or wanting in certain individuals. 4. Deficient acclimatization results in oxygen want or relative anemia. 5. As a result of diminished or limited oxygen supply, the increased excitability or irritability of the nerve structures may be explained. 6. If by therapeutic or other means the blood forming mechanism can be stimulated into activity, individuals should find no more difficulty in living tranquil lives in the high altitudes than at the sea levels."—(J. A. M. A.)

A cause of sudden death is embolism of the pulmonary artery by air, which is sucked in through a wound in a vein, and becomes churned up into a bloody froth, distending the pulmonary artery and producing a complete block in the pulmonary circulation. Most of these cases occur during operations upon the neck, though wounds of veins in other parts of the body may produce the same result.



During Pregnancy

STANOLIND Liquid Paraffin is an admirable laxative for use during pregnancy. It produces no irritation of the bowel, has not the slightest disturbing influence upon the uterus, and no effect upon the fetus.

The regular use of Stanolind Liquid Paraffin in the later months of pregnancy is an effective means of avoiding some of the serious dangers attending the parturient state because of sluggish bowel action.

Stanolind Liquid Paraffin counteracts to a definite extent an unfortunate dietetic effect on the intestine in this manner; the concentrated diet of our modern civilized life contains so little indigestible material that the residue is apt to form a pasty mass which tends to adhere to the intestinal wall. Stanolind Liquid Paraffin modifies this food residue, and thus tends to render the mass less adhesive.

Stanolind Liquid Paraffin is mechanical in action, lubricating in effect. Its *suavity* is one of the reasons why increase of dose is never needful after the proper amount is once ascertained.

*A trial quantity with informative
booklet will be sent on request.*

Standard Oil Company

(Indiana)

72 West Adams Street

CHICAGO, U. S. A.

73

Wilford Hall Laboratories

Port Chester, New York

The most modern plant in America for
the manufacture of Surgical Dressings,
Plasters, Medicated Soaps, etc.

Screening and Radium Dosage.

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland on October 27th, Captain Walter C. Stevenson read a paper on screening and radium dosage. He used the total amount of ionization effected on the tissue by the radio-active agent as his basis of measurement. The total amount of ionization was obtained by multiplying the average amount of radium emanation used in a treatment by the time of employment in hours, and by the proportion of activity remaining after the rays traversed the screen, as shown by the electroscope.

He cited his experience with a patient having an extensive port-wine mark where a similar extent of superficial reaction, as far as could be judged by the naked eye, resulted from radiation without a screen, and with various thicknesses of lead screens, provided the loss of activity of the emanation due to screening was compensated for by longer exposure, so that the total ionization was the same in each case. He pointed out the importance of the screening effect of the tissues on the uniformity of radiation, basing his contentions on electroscopic experiments with various thicknesses of beef, from 1 mm. to 30 cm. thickness. He found that lead had approximately ten times the screening power of animal tissues. As an illustration of an efficient dose, he alluded to a patient shown to the meeting, who, to all appearances, was cured for over a year of a tumor of the palate, 2 cm. across, which was proved histologically to be a very malignant type of epithelioma. The patient was treated with six radium emanation needles for three hours, the dose being recorded as 23.3 (6) = 70 millicurie hours. In the estimation of a dose, the cubic contents and shape of a tumor, the amount of screening and the number of foci of radiation used in a given area must *inter alia* be taken into consideration. When employing needles of a standard thickness of steel the amount of screening from them was constant, while the loss of activity due to the tissues—that is, the uniformity of radiation—depended on the distance of the needles from one another.—(*Brit. Med. Jour.*, Dec. 9, 1916.)

Circumscribed Purulent Leptomeningitis.

S. Leopold, Philadelphia, reports two cases of circumscribed purulent leptomeningitis due to frontal sinusitis. This may occur with or without brain abscess or may be associated with dural inflammation or with extradural abscess. It usually occurs on the convexity of one or both frontal lobes, with varying involvement of other regions. The symptoms are those of sinus disease with accompanying meningitis, and three forms may be distinguished, a sudden apoplectic type, a slow insidious protracted one, and an intermittent form with long interval before the meningitis involvement. His first case illustrates the sudden onset of meningitis in the last type. A second was one of sudden onset without localizing symptoms, and both were rapidly fatal. The first was preceded for a long time by repeated nasal catarrh. A few cases have been reported in which operation led to recovery.—(*J. A. M. A.*)

Thoracoscopy.

H. C. Jacobaeus gives a further account (*Nordiskt Med. Arkiv*, Stockholm, XLVII, Kirurgi) of his experience of endopleural operations carried out with the help of laparothoracoscopy, or, in other words, by the insertion into the pleural cavity of an instrument resembling a cystoscope. His present communication gives an account of his use of the galvanocautery, introduced into the pleural cavity in addition to the thoracoscope, for the purpose of dividing pleural adhe-

sions that prevented the establishment of a complete artificial pneumothorax in patients with pulmonary tuberculosis, under local anesthesia. The size and position of the pleural adhesions requiring division are determined by x-ray examinations in part; naturally, more accurate information about them is acquired by direct inspection through the thoracoscope.

Novocain is the local anesthetic employed; the trocar for the thoracoscope is pushed through a convenient interspace, that for the galvanocautery being entered through the next space above or below. The task of finding and burning through the adhesion may be unexpectedly difficult; it was easy in the first three cases recorded here by Jacobaeus, but in the fourth required the repetition of the manœuvres ten or twelve times, over half-an-hour being spent before the division was at last completed—the adhesions were much more extensive than the x-ray pictures had led him to expect. In a fifth patient, a very stout pleural adhesion was burnt through; the pleural cavity was aired to get rid of the smoke caused by the combustion; the pleural end of the severed adhesion then bled to the extent of about 50 c.c. Three weeks later, a further thoracoscopy showed that the adhesion had been completely severed. The patient subsequently developed empyema with its serious consequences. Jacobaeus gives a full description of the microscopical appearances of the pleural adhesions that are habitually present in pulmonary tuberculosis, based on post-mortem examinations.—(*Practitioner*, No. 5, 1916.)

Leucocytosis in Pregnancy.

J. L. Baer of Chicago says there is a leucocytosis of pregnancy, appearing in the ninth month, slight in amount, and especially noticeable in primiparæ.

The leucocytosis of labor is marked in primiparæ, averaging 18,255, and is increased by a duration of labor beyond twenty-four hours. It is less marked in II-paræ and is slight in III plus paræ.

The height of the curve in primiparæ and multiparæ is reached on the first day of the puerperium, after which there is a rapid and constant decline to the tenth day, at which time the curve is about at the normal level.

The onset of lactation does not influence the leucocyte count, except that in the "fourth day" primiparæ there is a slight secondary elevation on the preceding day—about 1,500 to 2,000.

Age is not a factor, except in primiparæ aged 20 years and under, in whom the leucocytosis is higher than in any other group.

Differential analysis showed the increase in leucocytes to be chiefly in the polymorphonuclear neutrophils with a return to normal proportions by the third day of the puerperium, an absence of eosinophiles in about half the cases in labor, and their reappearance in normal proportions on the first day of the puerperium. The lymphocytes, large and small, mast cells and transitional types, showed nothing unusual.—(*Surg., Gyn. and Obst.*, Nov., 1916.)

Cultivate happiness as a habit, take up an elevating pastime outside of your legitimate life work. Be generous in estimating your fellows, since it is possible to find more in the misery of the wicked to weep for than in their crimes to condemn.

—MATTHEW WOODS.

Non-proteolytic organisms cannot utilize the higher proteins as food substances and even the proteolytic organisms grow more readily at first in media which contain an adequate supply of immediately available food material.